

PROJECT MANUAL
FOR

Beck Recreation Center Multi-Purpose
Fields & Facilities

No. 19-032



GEORGETOWN COUNTY,
SOUTH CAROLINA

VOLUME I
DIVISION 0 – BIDDING AND CONTRACT DOCUMENTS
DIVISION 1 – GENERAL REQUIREMENTS
DIVISION 2 – TECHNICAL SPECIFICATIONS

PREPARED BY:
GEORGETOWN COUNTY
PARKS AND RECREATION DEPARTMENT

&

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DATE: 04/26/2019

VOLUME I PROJECT MANUAL

DATE: 04/26/2019

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Intent to Respond

REF: Bid #19-032, Beck Recreation Center Multi-Purpose Fields & Facilities

If your company intends to respond to this solicitation, please complete and promptly return this form to assure that you can be included on the mailing list to receive all addenda regarding this project.

It is not necessary to return any other portion of the bid documents if you are not bidding.

Failure to return the Intent to Respond shall not be sufficient cause to rule a submittal as non-responsive; nor does the return of the form obligate an interested party to submit a response. Georgetown County's efforts to directly provide interested parties with addenda or additional information are provided as a courtesy only, and do not alleviate the respondent from their obligation to verify they have received and considered all addenda. All addenda are published and available on the county website at www.gtcounty.org select Quick Links, "Bid Opportunities" and "Current Bids."

Our firm **does** intend on responding to this solicitation.

Our firm **does not** intend on responding to this solicitation.

Company Name: _____

Address: _____

Contact Person: _____

Telephone: _____

FAX: _____

E-Mail: _____

Reason if **not** responding: _____

Please return this completed form to Nancy Silver, Purchasing Officer.

- by e-mail to purch@gtcounty.org
- or by FAX to (843)545-3500.

[End of Intent to Respond]

SECTION 00010

INVITATION FOR BIDS

Time Line: Invitation for Bid #19-032

Item	Date	Time	Location*
Advertised Date of Issue:	Friday, April 26, 2019	n/a	n/a
MANDATORY Pre-Bid Conference & Site Inspection:	Wednesday, May 8, 2019	9:00AM ET	On Site†
Inquiry Cut-Off Time:	Wednesday, May 15, 2019	3:00PM ET	Suite 239
Bids Must be Received on/or Before:	Wednesday, May 22, 2019	3:00PM ET	Suite 239
Public Bid Opening & Tabulation:	Wednesday, May 22, 2019	3:00PM ET	Suite 239

*All locations in the Old County Courthouse, 129 Screven Street, Georgetown, SC unless otherwise stated.

† Beck Recreation Center, Program Room-2030 Church St., Georgetown, SC 29440. See front desk attendant for directions to the Program Room.

**Bid #19-032, Beck Recreation Center Multi-Purpose Fields & Facilities
GEORGETOWN COUNTY, SOUTH CAROLINA**

- 1) Written, sealed bids for the Club Circle Drainage Improvements, Georgetown County, SC will be received by the Purchasing Office, 2nd floor, Suite 239, 129 Screven St., Georgetown, SC until cut-off time shown in the Bid Time Line above. Bids will then be publicly and promptly opened and read at the designated time by the Purchasing Officer. Bids that are not in the Purchasing Officer’s possession prior to the stated opening date and time will be considered NON-RESPONSIVE and returned unopened. An official authorized to bind the Bid must sign all bid documents submitted.

MAILING ADDRESS:

County of Georgetown
Post Office Drawer 421270
Georgetown SC 29442-4200
Attn: Purchasing

STREET ADDRESS:

Georgetown County Courthouse
129 Screven Street, Suite 239
Georgetown SC 29440-3641
Attn: Purchasing

One (1) unbound, reproducible ORIGINAL, must be submitted in a sealed envelope and clearly marked on the outermost container as follows:

**OFFEROR’S NAME
BID ITEM NAME
BID NUMBER**

- 2) **BASE BID:**

The scope of this work shall include removal and relocation of a playground, pavilion, and two benches. Construction of a running track, multi-use/football field, one basketball court and associated fencing. Site electrical and lighting for field and one basketball court. Site work to include any demolition and proposed grading, drainage, and stormwater. Installation of an irrigation system and landscaping. Contractor shall also provide and coordinate the installation of a CXT “brand name or equal” pre-fabricated restroom and concession building including water and sewer to the building. General Contractor shall coordinate with pre-fabricated building vendor for stamped permit and construction drawings in order to obtain building permit from City of Georgetown. Work shall also include the construction of a driveway, parking lot, and sidewalks adjacent to the new restroom and concessions. See engineered drawings provided by Stantec Consulting Services, Inc. for detailed drawings and specifications. A Geotechnical report provided by Terracon Consultants, Inc. is also available for download free of charge at the County’s website along with a CXT pre-fabricated building design that is being provided as a sample for informational purposes only and as the basis for design.

3) ALTERNATES:

There are several alternates for this project as notated below.

Alternate #1–ADD-One basketball court, goals, and associated lighting

Alternate #2–ADD-Upgrade from Base Bid to Acrylic Track Surfacing System for Track

Alternate #3–ADD-Upgrade from Base Bid to EDPM Track Surfacing System for Track

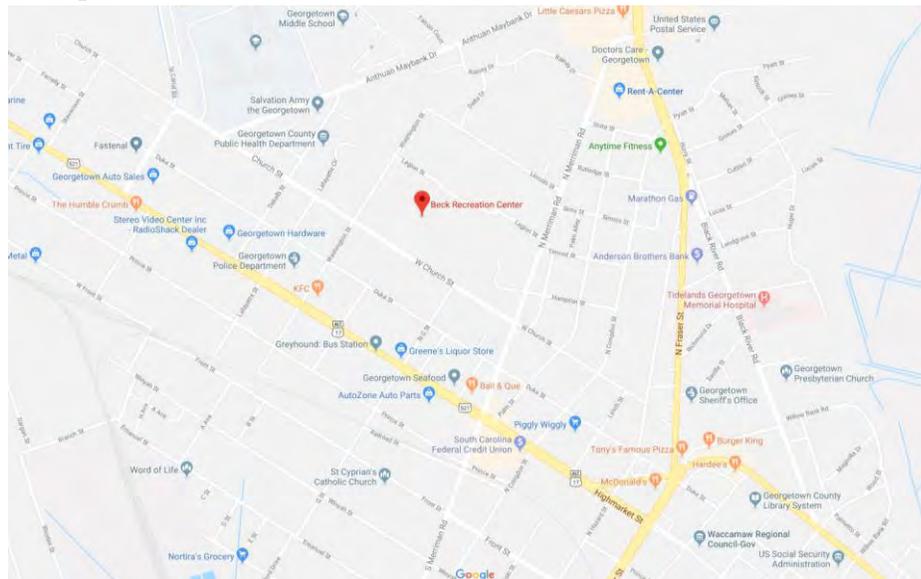
Alternate #4–ADD-Football Goals – Provide and Install

Alternate #5–ADD-Field Event Facilities (Long/Triple Jump, Shot Put, Discus and Cage)

Alternate #6–ADD-Shade structure at plaza – Provide and Install

Alternate #7–DEDUCT-Substitute Common Bermuda grass sod for Tifway 419.

- 4) This project may consist of, but not be limited to: site preparation, demolition, grading, drainage, utilities, field construction, fencing, relocation of existing equipment, installation of pre-fabricated building(s), electrical/lighting, landscaping, and irrigation as indicated in the base bid, alternates, and associated engineered drawings. The work performed under this Contract shall include, but may not be limited to: the furnishing of all labor, materials, equipment and services, whether specifically mentioned or not, that is required to complete the Construction of the Work of the project. All requirements of the State of South Carolina and all pertinent administrative regulations shall apply to this project as if herein written out in full.
- 5) All Work associated with constructing the sports fields within the perimeter of the sports fields, after subgrade construction, shall be performed by a Certified Field Builder meeting the requirements referenced in Section 311210, 1.2C-Contractor Qualifications and as referenced in the notes on sheet C8-Site Layout. All Work associated with constructing the running track and field facilities, after subgrade construction, shall be performed by a Certified Track Builder / Contractor meeting the requirements referenced in Section 311210, 1.2C-Contractor Qualifications and as referenced in the notes on sheet C8-Site Layout. The Contractor will be responsible for providing a 12 month warranty for seed, hydroseed, & sod from the date of substantial completion. See Section 329200 Turf and Grasses, Item 1.8 Warranty for further information. The Contractor will be responsible for providing a 12 month full maintenance of the turf and grasses from the date of final completion. See Section 329200 Turf and Grasses, Item 3.11 Maintenance Service for further information.
- 6) A **MANDATORY Pre-Bid Meeting & Site Inspection** will be held at the job site which is located at 2030 Church St., Georgetown, SC 29440 on **Wednesday, May 8, 2019 at 9:00 AM** Eastern Time. We will meet in the Beck Recreation Center Program Room for official sign-in registration and pre-bid meeting, then move outside for the site tour. Each provider will be responsible to make their own independent inspection of the project area. Only those companies with a representative registered in attendance will be qualified to submit a Bid.



- 7) Each proposer shall respond as provided more specifically herein, Section 00100, Instructions to Bidders, Paragraph IV Preparation and Submission of Bids. Proposals or amendments to proposals received after the proposal deadline will be classified as “Late Proposals” and will not be accepted. The Respondent shall sign his / her proposal correctly. All offers shall be entered in ink or typewritten. Proposals may be rejected if any omissions, alteration of form, additions not called for, or any irregularities of any kind are shown.
- 8) **Bid Security/Bid Bonding:**
- a) Each bid must be accompanied by a Bid Bond, or by a certified check payable to Georgetown County, SC, for an amount equal to five per-cent (5%) of the total base bid as a guarantee that if the bid is accepted, the required Contract will be executed within fifteen (15) days after receipt of written notice of formal award of Contract. Bids not including such a bid bond will not be considered. Any certified checks received will be returned to unsuccessful vendors after award of Bid.
 - b) The successful proposer must provide a Performance Bond from a surety company qualified to do business under the laws of the State of South Carolina in the amount of 100 percent (100%) of the contract amount, within fifteen (15) days the after receipt of written notice of formal award of the Contract.
 - c) The successful offeror must provide a Payment and Material Bond from a surety company qualified to do business under the laws of the State of South Carolina in the amount of 100 percent (100%) of the contract amount, within fifteen (15) days after receipt of written notice of formal award of Contract.
 - d) Should any Surety on the Construction Contract be determined unsatisfactory at any time by the Owner, notice will be given the Contractor who shall immediately provide a new Surety, satisfactory to the Owner and at no additional cost to the Owner. The Contract shall not be operative nor will any payments be due or paid until approval of the bonds has been made by the Owner.
 - e) The Bidder shall require the Attorney-in-Fact who executes the required bonds, on behalf of the Surety, to affix thereto a certified and current copy of his Power of Attorney, indicating the monetary limit of such power.
 - f) The cost of the bonds shall be included in the construction portion of the base bid.
- 9) The Construction Contract will be awarded to the firm or team of firms submitting the lowest and most responsive and responsible proposal as determined by the County. Georgetown County reserves the right to reject any and all proposals for any reason at any time prior to execution of the Contract. It further reserves the right to waive any and all technicalities and formalities in the proposal process as well as accept in whole or in part such proposal or proposals where it deems it advisable in protection of the best interests of the County and to hold all proposals for examination for a period not to exceed ninety (90) calendar days. The selected Contractor is encouraged to utilize, to the extent possible, local firms and trades from within Georgetown County.

Throughout this Project Manual all references to the “Owner” shall mean the County of Georgetown, SC or its Designated Representative.

END OF SECTION 00010



SECTION 00100
INSTRUCTIONS TO BIDDERS
Bid #19-032

1. **IMPORTANT OFFEROR NOTES:**

- a) Bid Number & Title must be shown on the OUTSIDE of the delivery package.
- b) Federal Express does NOT guarantee delivery to Georgetown, SC before 4:30 PM Eastern Time on Next Day Service.
- c) UPS WILL guarantee delivery to Georgetown, SC before 10:30 AM Eastern Time on Next Day “Early AM” Service.

2. **Inclement Weather/Closure of County Courthouse**

If the County Courthouse is closed for business at the time scheduled for bid opening, for whatever reason, sealed bids will be accepted and opened on the next scheduled business day, at the originally scheduled time.

3. This solicitation does not commit Georgetown County to award a contract, to pay any cost incurred in the preparation of the bid, or to procure or contract for goods or services. It is the responsibility of each bidder to see that the Georgetown County Purchasing Office receives bids on, or before, the date and time specified for the bid opening. No bid will be accepted thereafter. The County assumes no responsibility for delivery of bids that are mailed. Georgetown County reserves the right to reject any or all bids and to waive any informalities and technicalities in the bid process.

4. One (1) unbound, reproducible ORIGINAL, of the proposal must be submitted in a sealed envelope and clearly marked on the outermost container as follows:

OFFEROR’S NAME

BID ITEM NAME

BID NUMBER

5. Bidders shall be licensed as a General Contractor in the State of South Carolina and will hold all Trade Contracts and the Building Permit on the Project.
6. Trade Contractors (Prime and sub-contractors) shall be qualified to perform the work contracted for and shall be licensed as such in the State of South Carolina.
7. Any additional design services shall be performed by qualified architects and engineers licensed to perform the contracted work in the State of South Carolina.
8. No Bidder may submit more than one bid. Multiple bids for different manufacturers but represented by the same firm will not be accepted. Bids offered directly from manufacturers shall indicate if a local dealer/representative will be involved.

9. **Definitions:**

- a) The terms “Proposer”, “Offeror”, or “Bidder” refer to those parties who are submitting sealed responses for the work set forth in this document to the OWNER, as distinct from a sub-bidder who provides a bid to the Bidder. The term “Contractor” refers to the successful Bidder.
- b) The term “Beck Recreation Center Multi-Purpose Fields & Facilities” or “Service” refers to the **complete set of services** as specified in this document, in every aspect.
- c) The terms “Owner” and “County” refer to the County of Georgetown, South Carolina.
- d) Where the words “shall” or “must” are used, it signifies an absolute minimum function or capacity that, if not satisfied, may result in disqualification.

- e) Where the words “should”, “may”, or “is desirable” are used, it signifies desirable, but not mandatory functions or capacities. Bidders who are able to provide these functions or capacities may be evaluated more favorably than those who cannot.

10. SITE INSPECTION:

- a) The bidder is expected to have become familiar with and take into consideration, site conditions which may affect the work and to check all dimensions at the site.
- b) Each bidder shall acquaint themselves thoroughly as to the character and nature of the work to be done. Each bidder furthermore shall make a careful examination of the site of the work and inform themselves fully as to the difficulties to be encountered in performance of the work, the facilities for delivering, storing and placing materials and equipment and other conditions relating to construction and labor.
- c) The bidder shall examine the premises and the site and compare them with any applicable drawings and specifications. (S)he shall familiarize themselves with the existing conditions such as obstructive area levels and any problems related to erecting the required systems.
- d) No plea of ignorance of conditions that exist or may hereafter exist on the site of the work, or difficulties that may be encountered in the execution of the work, as a result of failure to make necessary investigations and examinations, will be accepted as an excuse for any failure or omission on the part of the Contractor to fulfill in every detail all the requirements of the contract documents and to complete the work for the consideration set forth therein, or as a basis for any claim whatsoever.
- e) Insofar as possible, the Contractor, in carrying out his/her work, must employ such methods or means as will not cause interruption of or interference with the work of any other Contractor, or County personnel at the site.
- f) When boring data is provided by the Owner, the Bidder shall assume responsibility for any conclusions he/she may draw from such data. (S)he may employ his/her own consultants to analyze available information and shall be responsible for any conclusions drawn from that information. The cost of such employment shall be borne solely by the Bidder.

11. Correction or Withdrawal of Bids; Cancellation of Awards

An offeror must submit in writing a request to either correct or withdraw a bid to the Procurement Officer. Each written request must document the fact that the offeror’s mistake is clearly an error that will cause him substantial loss.

- a) Correction of awards : An offeror shall not be permitted to correct a bid mistake after bid opening that would cause such offeror to have the low bid unless the mistake in the judgment of the Procurement Officer is clearly evident from examining the bid document; for example, extension of unit prices or errors in addition.
- b) Cancellation of awards prior to performance: When it is determined after an award has been issued but before performance has begun that Georgetown County’s requirements for the goods or services have changed or have not been met, the award or contract may be canceled and either re-awarded or a new solicitation issued.

12. **Faxed or E-mailed bids will not be accepted by Georgetown County.**

13. If you need any reasonable accommodation for any type of disability in order to participate in this procurement, please contact the purchasing office as soon as possible.

14. Title VI of the Civil Rights Act of 1964: Georgetown County hereby gives public notice that it is the policy of the agency to assure full compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related statutes and regulations in all programs and activities. Title VI requires that no person in the United States of America shall, on the grounds of race, color, or national origin, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which Georgetown County receives federal financial assistance. Any person who believes they have been aggrieved by an unlawful discriminatory practice under Title VI has a right to file a formal complaint with Georgetown County. Any such complaint must be in writing and filed with Georgetown County's Title VI Coordinator within one hundred and eighty (180) days following the date of the alleged discriminatory occurrence. For more information, or to obtain a Title VI Discriminatory Complaint Form, please see our website at: <http://www.gtcounty.org/about/faqs.html>.
15. Any deviations from the specifications or modification of this bid and any extra or incidental work or reductions in work shall be set forth in writing and signed by both parties prior to making such change. Any increase or decrease in the bid price resulting from such change shall be included in writing.
16. Exceptions: The bidder shall list on a separate sheet of paper any variations from, or exceptions to, the conditions and specifications of this bid. This sheet shall be labeled "Exception(s) to Bid Conditions and Specifications," and shall be attached to the bid. When Proposers find instances where they must take exception with certain requirements or specifications of the bid, all exceptions shall be clearly identified. Written explanations shall include the scope of the exceptions, the ramifications of the exceptions for the County of Georgetown, and a description of the advantage to be gained or disadvantages to be incurred by the County as a result of these exceptions.
17. The County reserves the right to reject any or all bids, waive any informality in bids and accept in whole or in part such bid or bids as may be deemed in the best interest of the County. Georgetown County reserves the right to reject any bid submitted, at sole option that the vendor may not be able to meet the service requirements of the bid.
18. Publicity releases: contractor agrees not to refer to award of any resulting contract in commercial advertising in such a manner as to state or imply that the products or services provided are endorsed or preferred by the user.
19. Material Safety Data Sheets: The County of Georgetown will not receive any materials, products, or chemicals which may be hazardous to an employee's health unless accompanied by a Material Data Sheet when received.
20. Ownership of Copyright: All right, title and interest in all copyrightable materials which vendor shall create in the performance of its obligations hereunder shall be the property of the procurer. Vendor agrees to assign and hereby does assign any and all interest it has in and to such material to procurer. Vendor agrees, upon the request of procurer to execute all papers and perform all other such acts necessary to assist procurer to obtain and register copyrights on such materials. Where applicable, works of authorship created by the vendor in the performance of its obligations hereunder, shall be considered "works for hire" as defined in the U.S. Copyright Act.
21. Ownership of Documents: Any reports, studies, photographs, negatives or other documents prepared by vendor in the performance of its obligations shall be the exclusive property of the procurer and all such material shall be remitted to the procurer by the vendor upon completion, termination or cancellation of this order. Vendor shall not use, willingly allow or cause to have such material used for any purpose other than performance of its obligations under this order without the prior written consent of the procurer.
22. Affirmative Action: The contractor will take affirmative action in complying with all Federal and State requirements concerning fair employment and employment of the handicapped, and concerning the treatment

of all employees, without regard or discrimination by reason of age, race, color, religion, sex, national origin or physical handicap. The following are incorporated herein by reference: 41 C.F.R. 60-1.4, 60-250.4 and 60-741.4.

23. All Federally Funded or Assisted Construction Contracts Over \$2,000:

- A. Davis-Bacon Requirements. These contracts need to include a provision for compliance with the Davis-Bacon Act (40 USC 276a to a—7) and the Department of Labor implementing regulations (29 CFR Part 5). Under this Act, Contractors are required to include the contract provisions in Section 5.5 (a) of 29 CFR Part 5, and to pay wages to laborers and mechanics at a rate not less than the minimum wages specified in the wage determination made by the Secretary of Labor. In addition, Contractors shall be required to pay wages not less than the minimum wages specified in the wage determination made by the Secretary of Labor. In addition, Contractors shall be required to pay wages not less often than once a week. Current Wage Determination for Georgetown County in South Carolina is available on-line at <http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=Davis-Bacon&docid=SC20080033>
- B. Contract Work Hours and Safety Standard Act Requirements. The contracts must include a provision for compliance with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 USC 327-330) as supplemented by the Department of Labor regulations (29 CFR Part 5). Under Section 103 of the Act, each Contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard workweek of 40 hours. Work in excess of the standard workweek is permissible provided that the worker is compensated at a rate not less than one times the basic rate of pay for all hours worked in excess of 40 hours in the workweek. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to health and safety as determined under construction, safety and health standards promulgated by the Secretary of Labor. These requirements do not apply to the purchases of supplies, materials, or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
- C. Copeland “Anti-Kickback” Act Requirements. All construction contracts over \$2,000.00 must include a provision for compliance with the Copeland “Anti-Kickback” Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3). This act provides that each Contractor shall be prohibited from inducing, by any means, persons employed in the construction, completion, or repaid of public work to give up any part of their compensation.

24. CERTIFICATION REGARDING DRUG-FREE WORKPLACE:

The contractor certifies that the vendor(s) will provide a “drug-free workplace” as that term is defined in Section 44-107-30 of the Code of Laws of South Carolina, 1976, as amended, by the complying with the requirements set forth in title 44, Chapter 107.

25. Certification of Non-Segregated Facilities

The federally-assisted construction contractor certifies that he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated on the basis of race, color, religion, or national origin because

of habit, local custom, or any other reason. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause and that he will retain such certifications in his files.

26. ILLEGAL IMMIGRATION: Construction

By signing its bid or proposal, Contractor certifies that it will comply with the applicable requirements of Title 8, Chapter 14 of the South Carolina Code of Laws and agrees to provide to the State upon request any documentation required to establish either: (a) that Title 8, Chapter 14 is inapplicable both to Contractor and its subcontractors or sub-subcontractors; or (b) that Contractor and its subcontractors or sub-subcontractors are in compliance with Title 8, Chapter 14. Pursuant to Section 8-14-60, "A person who knowingly makes or files any false, fictitious, or fraudulent document, statement, or report pursuant to this chapter is guilty of a felony, and, upon conviction, must be fined within the discretion of the court or imprisoned for not more than five years, or both." Contractor agrees to include in any contracts with its subcontractors language requiring its subcontractors to (a) comply with the applicable requirements of Title 8, Chapter 14, and (b) include in their contracts with the sub-subcontractors language requiring the sub-subcontractors to comply with the applicable requirements of Title 8, Chapter 14. (An overview is available at www.procurement.sc.gov)

27. Bidders must clearly mark as "confidential" each part of their bid which they consider to be proprietary information that could be exempt from disclosure under section 30-4-40, Code of Laws of South Carolina 1976, as amended (Freedom of Information Act). If any part is designated as confidential, there must be attached to that part an explanation of how this information fits within one or more categories listed in section 30-4-40. The County reserves the right to determine whether this information should be exempt from disclosure and no legal action may be brought against the County or its agents for its determination in this regard.

28. Nothing herein is intended to exclude any responsible vendor, his product or service or in any way restrain or restrict competition. On the contrary, all responsible vendors are encouraged to bid and their bids are solicited.

29. Acknowledgement of Addenda

Each contractor is responsible to verify the number of total addenda issued prior to bid. **Failure to acknowledge all addenda shall disqualify the bidder.** All addenda are posted by the County at the website located at www.georgetowncountysc.org, select "Purchasing" and "Current Bids". It is each proposer's responsibility to verify that all addenda have been received and acknowledged.

30. Form and Style of Bids

- a) Bids in the form of sealed proposals for the Construction of the Project will be received until the time and the date stated in Section 00010, Notice to Bidders.
- b) The Bid shall be submitted on the Bid Form provided; no other form is acceptable.
- c) The successful Bidder will be required to provide verified breakdown of costs of all services and work in a manner acceptable to the Owner.
- d) All blanks on the Bid Form shall be filled in, either typed or printed in ink. The person signing the bid shall initial all corrections or erasures.
- e) Where so indicated on the Bid Form, the Bid Sum shall be expressed in both words and figures; in case of a discrepancy between the two, the Sums expressed in words shall govern.

- f) Bid unit price on quantity specified -- extend and show total. In case of errors in extension, unit prices shall govern.
- g) Bidder shall quote all Alternates in the Bidding Documents. If Bidder fails to bid on all Alternates, then his/her Bid may be considered irregular, non-responsive and may be disqualified.
- h) Bids containing qualifications will be considered irregular, non-responsive and may be disqualified.
- i) A Bid Form submitted by a partnership shall list the names of all partners and shall be signed in the partnership name by one of the members of the partnership who is authorized to sign for the partnership.
- j) A Bid Form submitted by a corporation shall be executed in the legal name of the corporation, followed by the state of incorporation and signed by the President or Vice President or other authorized officer. The name of each person signing the Bid Form shall be typed or printed below the signature.
- k) When the person signing for a corporation is other than the President or Vice President and when requested by the Owner, a resolution or other satisfactory evidence of the authority of the officer signing in behalf of the corporation shall be furnished for the Owner's records. The name of each person signing the Bid Form shall be typed or printed below the signature.

31. **Request for Information or Clarification:**

To ensure a fair review and selection process, firms submitting proposals are prohibited from contacting any other staff or Council members regarding the content, timing or scope of these proposals.

All questions or requests for information should be directed, in writing, prior to the deadline shown in the timeline of this solicitation to:

Nancy Silver, Purchasing Officer
Fax: (843) 545-3500, or e-mail: nsilver@gtcounty.org

32. **Insurance**

The successful bidder shall procure, maintain, and provide proof of, insurance coverage for injuries to persons and/or property damage as may arise from or in conjunction with, the work performed on behalf of the County by the bidder, his agents, representatives, employees or subcontractors. Proof of coverage as contained herein shall be submitted fifteen (15) days prior to the commencement of work and such coverage shall be maintained by the bidder for the duration of the contract period; for occurrence policies.

a. **General Liability**

Coverage shall be as broad as: Comprehensive General Liability endorsed to include Broad Form, Commercial General Liability form including Products/Completed Operations.

1. **Minimum Limits**

General Liability:
 \$1,000,000 General Aggregate Limit
 \$1,000,000 Products & Completed Operations
 \$1,000,000 Personal and Advertising Injury
 \$1,000,000 Each Occurrence Limit
 \$50,000 Fire Damage Limit
 \$5,000 Medical Expense Limit

b. **Automobile Liability**

Coverage sufficient to cover all vehicles owned, used, or hired by the bidder, his agents, representatives, employees or subcontractors.

1. Minimum Limits
Automobile Liability:
\$1,000,000 Combined Single Limit
\$1,000,000 Each Occurrence Limit
\$5,000 Medical Expense Limit
- c. Workers' Compensation
Limits as required by the Workers' Compensation Act of SC. Employers Liability, \$1,000,000.
- d. Owners' & Contractors' Protective Liability
Policy will be in name of County. Minimum limits required are \$1,000,000.
- e. Professional Liability
Minimum limits are \$1,000,000 per occurrence.
- f. Coverage Provisions
 1. All deductibles or self-insured retention shall appear on the certificate(s).
 2. The County of Georgetown, its officers/ officials, employees, agents and volunteers shall be added as "additional insured" as their interests may appear. This provision does not apply to Professional Liability or Workers' Compensation/Employers' Liability.
 3. The offeror's insurance shall be primary over any applicable insurance or self-insurance maintained by the County.
 4. Shall provide 30 days written notice to the County before any cancellation, suspension, or void of coverage in whole or part, where such provision is reasonable.
 5. All coverage for subcontractors of the bidder shall be subject to all of the requirements stated herein.
 6. All deductibles or self-insured retention shall appear on the certificate(s) and shall be subject to approval by the County. At the option of the County, either; the insurer shall reduce or eliminate such deductible or self-insured retention; or the bidder shall be required to procure a bond guaranteeing payment of losses and related claims expenses.
 7. Failure to comply with any reporting provisions of the policy(s) shall not affect coverage provided the County, its officers/officials, agents, employees and volunteers.
 8. The insurer shall agree to waive all rights of subrogation against the County, its' officers/officials, agents, employees or volunteers for any act, omission or condition of premises which the parties may be held liable by reason of negligence.
 9. The bidder shall furnish the County certificates of insurance including endorsements affecting coverage. The certificates are to be signed by a person authorized by the insurance company(s) to bind coverage on its' behalf, if executed by a broker, notarized copy of authorization to bind, or certify coverage must be attached.
 10. All insurance shall be placed with insurers maintaining an A.M. Best rating of no less than an A:VII. If A.M. Best rating is less than A:VII, approval must be received from County's Risk Officer.

33. **Workman's Compensation Coverage**

Georgetown County, SC will require each contractor and service provider to maintain on file with the purchasing officer, a current Certificate of Insurance showing limits as required by the Workers' Compensation Act of SC: Employers Liability, \$1,000,000.

The law also recognizes "statutory employees". These are employees who work for a subcontractor who may be working for a business or another contractor. Employers should inquire whether or not a subcontractor working for them has workers' compensation insurance, regardless of the number of employees employed by

the subcontractor. If the subcontractor does not, the subcontractor's injured employees would be covered under the employer's workers' compensation insurance. If the subcontractor does not carry workers' compensation insurance, then the owner or the principal contractor would be liable just as if the subcontractor's employee was one of their employees.

For answers to additional questions, visit the SC Worker's Compensation Commission website, at: <http://www.wcc.state.sc.us/Frequently%20Asked%20Questions/FAQ.htm>

34. **Builders' Risk Insurance**. Contractor shall provide and maintain, during the progress of the work and until execution of the Certificate of Contract Completion, a Builder's Risk Insurance policy to cover all work in the course of construction including false work, temporary buildings, scaffolding, and materials used in the construction process (including materials designated for the project but stored off site or in transit). The coverage shall equal the total completed value of the work and shall provide recovery at replacement cost.
- a) Such insurance shall be on a special cause of loss form, providing coverage on an open perils basis insuring against the direct physical loss of or damage to covered property, including but not limited to theft, vandalism, malicious mischief, earthquake, tornado, lightning, explosion, breakage of glass, collapse, water damage, and testing/startup.
 - b) Coverage shall include coverage for "soft costs" (costs other than replacement of building materials) including, but not limited to, the reasonable extra costs of the architect/engineer and reasonable Contractor extension or acceleration costs. This coverage shall also include the reasonable extra costs of expediting temporary and permanent repairs to, or permanent replacement of, damaged property. This shall include overtime wages and the extra cost of express or other means for rapidly transporting materials and supplies necessary to the repair or replacement.
 - c) The policy shall specifically permit and allow for partial occupancy by the owner prior to execution of the final Certification of Contract Completion, and coverage shall remain in effect until all punch list items are completed.
 - d) The Builder's Risk deductible may not exceed \$5,000. The Contractor or subcontractor experiencing any loss claimed under the Builder's Risk policy shall be responsible for that loss up to the amount of the deductible.
 - e) If Contractor is involved solely in the installation of material and equipment and not in new building construction, the Contractor shall provide an Installation Floater policy in lieu of a Builder's Risk policy. The policy must comply with the provisions of this paragraph.

35. **Hold Harmless Clause**

The Contractor shall, during the term of the contract including any warranty period, indemnify, defend, and hold harmless the County, its officials, employees, agents, and representatives thereof from all suits, actions, or claims of any kind, including attorney's fees, brought on account of any personal injuries, damages, or violations of rights, sustained by any person or property in consequence of any neglect in safeguarding contract work or on account of any act or omission by the contractor or his employees, or from any claims or amounts arising from violation of any law, bylaw, ordinance, regulation or decree. The vendor agrees that this clause shall include claims involving infringement of patent or copyright.

36. **Condition of Items**

All items shall be new, in first class condition, including containers suitable for shipment and storage, unless otherwise indicated herein. Verbal agreements to the contrary will not be recognized.

37. **Workmanship and Inspection**

All work under this contract shall be performed in a skillful and workmanlike manner. The County may, in writing, require the Contractor to remove any employee from work that the County deems incompetent or careless.

Further, the County may, from time to time, make inspections of the work performed under this contract. Any inspection by the County does not relieve the Contractor from any responsibility regarding defects or other failures to meet the contract requirements.

38. Progress Payments (If Applicable)

Contractor's Application for Payment shall be submitted to the Owner on AIA Document G702 and G703--1992 Edition, or such other form as may be mutually agreed upon. The period covered by each Application for Payment shall be not less than one calendar month. The Owner shall make progress payments to the Contractor on undisputed amounts certified by the Architect within twenty-one (21) days from receipt of the Application for Payment by the Owner in accordance with Title 29, Chapter 6 of the Code of Laws of South Carolina, 1976, as amended.

39. South Carolina Sales Tax

The County of Georgetown, SC is not exempt and pays the appropriate SC sales tax on all applicable purchases.

40. Assignment of Contract

This contract may not be assigned in whole or part without the written consent of the Purchasing Officer.

41. Termination

Subject to the provisions below, the contract may be terminated by the County upon thirty (30) days advance written notice to the other party; but if any work or service hereunder is in progress, but not completed as of the date of termination, then this contract may be extended upon written approval of the County until said work or services are completed and accepted.

a. Termination for Convenience

In the event that this contract is terminated or canceled upon request and for the convenience of the County, without the required thirty (30) days advance written notice, then the County shall negotiate reasonable termination costs, if applicable.

b. Termination for Cause

Termination by the County for cause, default or negligence on the part of the contractor shall be excluded from the foregoing provision; termination costs, if any, shall not apply. The thirty (30) days advance notice requirement is waived in the event of Termination for Cause.

c. Non-Appropriation:

It is understood and agreed by the parties that in the event funds are not appropriated in the current fiscal year or any subsequent fiscal years, this contract will become null and void and the County will only be required to pay for services completed to the satisfaction of the County.

42. Default

In case of default by the contractor, for any reason whatsoever, the County may procure the goods or services from another source and hold the contractor responsible for any resulting excess cost and may seek other remedies under law

43. Severability

In the event that any provision shall be adjudged or decreed to be invalid, such ruling shall not invalidate the entire Agreement but shall pertain only to the provision in question and the remaining provisions shall continue to be valid, binding and in full force and effect.

44. Applicable Laws

This Agreement shall be governed by and construed in accordance with the laws of the State of South Carolina, U.S.A.

45. Claims and Disputes:

All claims, disputes and other matters in question between parties arising out of, or relating to, this Agreement, or the breach thereof, shall be decided in the Circuit Court of the Fifteenth Judicial circuit in Georgetown County, South Carolina. By executing this Agreement, all parties specifically consent to venue and jurisdiction in Georgetown County, South Carolina and waive any right to contest jurisdiction and venue in said Court.

46. Rights of County

The County reserves the right to reject all or any part of any bid, waive informalities and award the contract to the lowest responsive and responsible bidder to best serve the interest of the County.

47. Award of Bid

In determining the lowest responsive and responsible bidder, in addition to price, there shall be considered the following:

- (a) The ability, capacity and skill of the bidder to perform the contract.
- (b) Whether the bidder can perform the contract within the time specified, without delay of interference.
- (c) The character, integrity, reputation, judgment, experience and efficiency of the bidder.
- (d) The quality of performance on previous contracts.
- (e) The previous and existing compliance by the bidder with laws and ordinances relating to the contract.
- (f) The sufficiency of the financial resources to perform the contract to provide the service.
- (g) The quality, availability and adaptability of the supplies or contractual services to the particular use required.
- (h) The ability of the bidder to provide future maintenance and service.
- (i) The discount terms and conditions of the bid.
- (j) Delivery time.

48. Notice of Award

A *Notice of Intent to Award* will be mailed to all respondents.

49. Protest

Bidders may refer to Sections 2-67, 2-73, and 2-74 of Ordinance #2008-09, also known as the Georgetown County, South Carolina Purchasing Policy to determine their remedies concerning this competitive process. The failure to be awarded a bid shall not be valid grounds for protest.

50. Debarment

By submitting a bid, the offeror certifies to the best of its knowledge and belief, that it and its principals, sub-contractors and assigns are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal, State or local department or agency. A copy of the County's debarment procedure in accordance with Section 2-68 of Ordinance #2008-09, also known as the Georgetown County, South Carolina Purchasing Policy is available upon request.

51. Firm Pricing for County Acceptance

Bid price must be firm for County acceptance for 90 days from bid opening date.

52. Brand Name or Equal:

- (a) The use of a “**Brand Name Only**” specification is for the purpose of describing the sole item that will satisfy the county’s requirements. Bids offering alternate products will be declared non-responsive.
- (b) The use of a “**Brand Name Or Equal**” specification is for the purpose of describing the standard of quality, performance and characteristics desired and is not intended to limit or restrict competition. An item shall be considered to be substantially equivalent, or “equal” to the specified brand in the

opinion of the Chief Procurement Officer, the County can reasonably anticipate sufficiently similar quality, capacity, durability, performance, utility and productivity as provided by the specified brand.

(c) The use of a “**Brand Name Or Approved Equal**” specification with a reference to a brand name or model number does not preclude an offer of a comparable or better product, if full specifications and descriptive literature are provided for the product. Bidder shall submit a Substitution Request form for a proposed equal to Purchasing at least ten (10) days prior to the bid opening date and time to allow Georgetown County to make a determination of equality to the brand specified. If the county approves the proposed equal, an amendment to the bid will be issued specifically identifying the item as an approved equivalent. Failure to provide such specifications and descriptive literature may be cause for rejection of the offer.

53. Substitutions and Product Options

Written requests for changes in products, materials, equipment and methods of construction required by the Contract Documents shall be submitted to the Owner prior to effecting such requested changes.

54. Mobilization After Notice to Proceed

Bid must show the number of days required to mobilize after receiving a Notice to Proceed under normal conditions. Failure to state delivery time obligates bidder to complete delivery in fourteen (14) calendar days. Unrealistically short or long delivery promised may cause bid to be disregarded. Consistent failure to meet delivery promises without valid reason may be cause for removal from bid list.

55. Permits

The successful Offeror must be responsible for obtaining all necessary town, county, and state permits/licenses and must comply with all local codes and ordinances. Copies of such permits/licenses shall be made available to the County upon request. Building contractors working within Georgetown County must also secure a Contractor’s License from the Building Department. Work within the Town of Andrews Limits may require a Business License from the town.

56. Environmental Management:

Vendor/Supplier/Contractor will be responsible for complying with all federal, state and local environmental regulations relating to transportation, handling, storage, spillage and any other aspect of providing the services specified herein, as applicable.

57. Bid Tabulation Results

Vendors wishing to view the bid tabulation results may visit the Georgetown County, SC web-site at: <http://www.georgetowncountysc.org>. Select “Bid Opportunities” from the Quick Links box, then “Bids Under Review” and double click the link under the individual bid listing.

58. The Bidder hereby certifies that he or she has carefully examined all of the Documents for the project, has carefully and thoroughly reviewed this Request for Bid/Quotation, has inspected the location of the project (if applicable), and understands the nature and scope of the work to be done; and that this Bid is based upon the terms, specifications, requirements, and conditions of the Request for Bid/ Documents. The Bidder further agrees that the performance time specified is a reasonable time, having carefully considered the nature and scope of the project as aforesaid.

59. Any attempt by the vendor to influence the opinion of County Staff or County Council by discussion, promotion, advertising, misrepresentation of the submittal or purchasing process or any procedure to promote their offer will constitute a violation of the vendor submittal conditions and will cause the vendor’s submittal to be declared null and void.

60. Apparent omission of a detailed description concerning any point, shall be regarded as meaning the best commercial practice is to prevail and that only material and workmanship of the finest quality are to be used.

61. Response Clarification

Georgetown County reserves the right to request additional written or oral information from Bidders in order to obtain clarification of their Responses.

62. Georgetown County, SC has a Local Vendor Preference Option by ordinance:

Sec 2-50. Local Preference Option

1. A vendor shall be deemed a Local Georgetown County vendor for the purposes of this Section if such vendor is an individual, partnership, association or corporation that is authorized to transact business within the State, maintains an office in Georgetown County, and maintains a representative inventory or commodities within the County on which the bid is submitted, and has paid all taxes duly assessed.
2. This option allows the lowest local Bidder whose bid is the lesser of \$10,000 or within five-percent (5%) of the lowest non-local Bidder to match the bid submitted by the non-local Bidder and thereby be awarded the contract. This preference shall apply only when (a) the total dollar purchase is \$10,000 or more; (b) the vendor has a physical business address located and operating within the limits of Georgetown County and has been doing business in the County for a period of twelve (12) months or more; and (c) the vendor provides proof of payment of all applicable Georgetown County taxes and fees if so requested.
3. Should the lowest responsible and responsive Georgetown County bidder not exercise its right to match the bid as granted herein, the next lowest qualified Georgetown County bidder shall have that right and so on. The right to exercise the right to match the bid shall be exercised within 24 hours of notification of the right to match the non-Georgetown County bidder's bid.
4. In order to qualify for the local preference authorized by this Section, the vendor seeking same shall be required to submit with its bid a statement containing relevant information which demonstrates compliance with the provisions of this Section. This statement shall be on a form provided by the County purchasing department and shall be signed under penalty of perjury. Failure to provide such affidavit at the time the bidder submits its bid shall constitute a waiver of any claim for preference.
5. For all contracts for architecture, professional engineering, or other professional services governed by § 2-56, Architect-Engineer and Land Surveying Services – Public Announcement and Selection Process, the county shall include the local business status of a firm among the factors considered when selecting which firms are “most highly qualified.” In determining which firm is the “most qualified” for purposes of negotiating a satisfactory contract, preference shall be given to a local business where all other relevant factors are equal.
6. Local preference shall not apply to the following categories of contracts: (a) Goods or services provided under a cooperative purchasing agreement or similar “piggyback” contract; (b) Contracts for professional services except as provided for in section five (§5) above; (c) Purchases or contracts which are funded, in whole or in part, by a governmental or other funding entity, where the terms and conditions of receipt of the funds prohibit the preference; (d) Purchases or contracts made pursuant to a noncompetitive award process, unless otherwise provided by this section; or (e) Any bid announcement which specifically provides that the general local preference policies set forth in this section are suspended due to the unique nature of the goods or services sought, the existence of an emergency as found by either the county council or county administrator, or where such suspension is, in the opinion of the county attorney, required by law.

See the RESIDENCE CERTIFICATION FOR LOCAL PREFERENCE form attached for details.

63. Bidding Documents

- a) Each Bidder shall carefully examine the Bidding and Contract Documents, General Requirements, Drawings and Technical Specifications and all addenda or other revisions and thoroughly familiarize themselves with the detailed requirements prior to submitting a Bid. Bidders shall promptly notify the Owner in writing of any ambiguity, inconsistency, error or omission, which they may discover upon examination of the Bidding and Contract Documents, Project Site and / or local conditions. The Owner shall make such interpretations, corrections or changes to the Bidding Documents and will reply to all questions submitted by the Bidders. The Owner will log all responses and issue an addendum as may be appropriate. The Owner will not be responsible for any oral instructions and / or responses. Interpretations, corrections or changes made in any other manner will not be binding. All addenda sent to Bidders will become a part of the Bidding and Contract Documents. All inquiries shall be directed in writing or transmitted by facsimile to the office of the Owner. No allowance will be made after Bids are received due to oversight and / or error by bidder.
- b) Each Bidder shall carefully review the Table of Contents and the List of Drawings in the Project Manual to determine if any instrument is missing from the Bidding Documents. Bidders shall promptly notify the Owner, in writing, of any discrepancy.
- c) Addenda will be mailed or faxed to all Bidders. Copies of Addenda will be made available for inspection at the office of the County Purchasing Officer. Prior to submitting a Bid each Bidder shall ascertain that he/she has received all Addenda issued.
- d) Owner does not assume any responsibility for errors, omissions or misinterpretations resulting from the Bidder's use of incomplete Bidding Documents.

64. Liquidated Damages

Refer to *The Project Manual, Vol. 1, Division 1, Section 01100, Summary of Work.*

65. Allowances

[Not included]

END OF SECTION 00100

SECTION 00300
BID FORM
MANDATORY BID SUBMITTAL FORM

For: **Bid No. 19-032, Beck Recreation Center Multi-Purpose Fields & Facilities**

To: **MAILING ADDRESS:**
County of Georgetown
Post Office Drawer 421270
Georgetown SC 29442-4200
Attn: Purchasing

STREET ADDRESS:
Georgetown County Courthouse
129 Screven Street, Suite 239
Georgetown SC 29440-3641
Attn: Purchasing

Name of Company Submitting Bid: _____

The undersigned, having visited the site of the Work and having familiarized themselves with local conditions affecting the design and cost of the work and with all requirements of the proposed Contract Documents, and duly issued Addenda to said documents, as acknowledged herein, propose to furnish and perform all labor, materials, necessary tools, expendable equipment, and all utility and transportation services necessary to perform and complete in a workmanlike manner all work required by said documents and Addenda.

- 1) **BASE BID PROPOSAL:** Bidder / Proposer agrees to perform all of the work described in the specifications, including any allowances, and shown on the drawings, for the sum of:

_____ \$ _____
(words shall govern)

- 2) **ALTERNATE #1:** One basketball court, goals, and associated lighting:

Add _____ \$ _____
(words shall govern)

- 3) **ALTERNATE #2:** Upgrade from Base Bid to Acrylic Track Surfacing System for Track:

Add _____ \$ _____
(words shall govern)

- 4) **ALTERNATE #3:** Upgrade from Base Bid to EDPM Track Surfacing System for Track:

Add _____ \$ _____
(words shall govern)

- 5) **ALTERNATE #4:** Football Goals – Provide and Install:

Add _____ \$ _____
(words shall govern)

- 6) **ALTERNATE #5:** Field Event Facilities (Long/Triple Jump, Shot Put, Discus and Cage):

Add _____ \$ _____
(words shall govern)

- 7) **ALTERNATE #6:** Shade structure at plaza – Provide and Install:

Add _____ \$ _____
(words shall govern)

- 8) ALTERNATE #7: Substitute Common Bermuda grass sod for Tifway 419:

Deduct _____ \$ _____
(words shall govern)

- 9) For additional work authorized after signing the Contract, the amount of overhead and the amount of profit to be added to base costs of labor and materials shall be (10%) total for overhead and profit on work performed by the Contractor's own forces and (15%) total on work by Subcontractors.
- 10) COMPLETION DATE: Contractor must conform to Division 0, Section 00750, Summary Schedule and Key Milestones.
- 11) LIQUIDATED DAMAGES: Liquidated damages for this project shall be \$500.00 per calendar day for Contractor's failure to complete any key milestone by its intermediate completion date or the Substantial Completion date. Refer to Division 1, Section 01100, Summary of Work.
- 12) The undersigned affirms that in making such Bid, neither he /she nor any company that they may represent, nor anyone in behalf of him / her or their company, directly or indirectly, has entered into any combination, collusion, undertaking or agreement with any other Bidder or Bidders to maintain the prices of said work, or any compact to prevent any other Bidder or Bidders from Bidding on said Contract or work and further affirms that such bid is made without regard or reference to any other Bidder or Proposer and without any agreement or understanding or combination either directly or indirectly with any other person or persons with reference to such Bidding in any way or manner whatsoever.
- 13) The undersigned, when notified of the acceptance of this Bid proposal, does hereby agree to enter into a Contract with the Owner within five (5) calendar days from the date of the Notice of Award, for the execution of the work described within the period of time allocated, and he / she shall give a Performance Bond and Payment Bond, with good and sufficient surety.
- 14) The undersigned further agrees that if awarded the Contract he /she will commence the work within ten (10) calendar days after the date of the Notice of Award and that he / she will complete the work in accordance with the Summary Schedule and Key Milestones and Substantial Completion date set forth in the Bidding and Contract Documents or such amended date as may be granted. If the undersigned fails to complete the work as provided in the aforementioned schedule, then and in that event, he / she further expressly agrees that, for each day that any phase of work under this Contract remains uncompleted thereafter the Owner may deduct from the Contract price herein specified the stipulated sum of liquidated damages as provided for herein and retain that sum for failure of the undersigned to complete this Contract on or before the expiration of the period shown in the completion schedule.
- 15) The undersigned agrees that the Owner's damages caused by delay are not capable of being established and would be difficult to measure accurately and that the sums herein specified as liquidated damages are not a penalty, but represent the parties' estimate of the actual damages which the Owner would suffer per day if the work is not completed as scheduled.
- 16) In submitting this Bid, it is understood that the right is reserved by the Owner to waive any informality or irregularity in any Bid or Bid guaranty, to reject any and all Bids, to re-Bid, to award or refrain from awarding a contract for the work and to negotiate with the apparent qualified low responsive Bidder to such extent as may be beneficial to the Owner.

- 17) The undersigned attaches hereto a cashier's check, certified check or Bid Bond in the sum five per-cent (5%) of the total base bid payable to Georgetown County, as required in the Request for Proposals, and the undersigned agrees that in case he / she fails within five (5) calendar days after Notice of Award of the Contract to him /her to enter into the Contract in writing and furnish the required Payment and Performance Bonds, with surety or sureties to be approved by Owner, and insurance policies or endorsements, the Owner may, as its option, determine that the undersigned has abandoned his / her rights and interest in such Bid and that the cashier's check, certified check, or Bid Bond accompanying his or her bid has been forfeited. Otherwise, the cashier's check or certified check shall be returned to the undersigned upon the execution of the Contract and acceptance of the bonds and insurance, or upon rejection of his / her Bid.
- 18) A Bid shall be considered unresponsive and shall be rejected if it fails to include fully executed statements or if the Bidder fails to furnish required data. When a determination has been made to award the Contract to a specific Contractor, such Contractor shall, prior to award, furnish such other pertinent information regarding his / her own employment policies and practices as well as those of his / her proposed prime contractor, subcontractors and consultants as the Owner may require.
- 19) The Bidder shall furnish similar statements executed by each of his / her prime contractor, first-tier and second-tier subcontractors and consultants whose contracts equal Ten Thousand Dollars (\$10,000.00) or more and shall obtain similar compliance by such prime contractor, subcontractors and consultants before awarding such contracts. No prime contractor or subcontract shall be awarded to any non-complying prime contractor and/or subcontractor.
- 20) It is understood and agreed that all workmanship and materials under all items of work are guaranteed for one (1) year from the date of Final Acceptance, unless otherwise specified.
- 21) The undersigned affirms that he / she has completed all of the blank spaces in the Bid Form, with an amount in words and numbers and agrees that where a discrepancy occurs between the prices quoted in words and/or in numbers the lowest figure quoted in words shall take precedence and govern when determining final costs or award of the Contract.
- 22) The undersigned affirms that wages not less than the minimum rates or wages, as predetermined for this project by the State of South Carolina were used in the preparation of this "Bid Form".
- 23) REQUIRED FORMS: There are specific forms required to be completed and submitted as part of the response to this Request for Proposal (RFP). The omission, whether inadvertent or not, of any one or more of these forms will cause the Bidder's / Proposer's response to be disqualified. The following forms identified as Exhibits to this RFP, shall be included in the response:

Exhibit A	Acknowledgement of Addenda
Exhibit B	Material Substitution Request Form
Exhibit C	Non-Collusion Affidavit
Exhibit D	IRS Form W-9
Exhibit E	Indemnification
Exhibit F	List of Prime and Subcontractors
Exhibit G	Statement of Experience
Exhibit H	Unit Price Schedule
Exhibit I	Resident Certification for Local Vendor Preference
Exhibit J	Exceptions Page Form
Exhibit K	CADD File Release Form

24) Project Mgr/NTP Contact Address: _____

25) Project Mgr/NTP Contact Person: _____

26) Telephone Number _____ Fax Number _____

27) E-Mail address _____

28) Remittance Address: _____

29) A/P Accounting Contact _____

30) Telephone Number _____ Fax Number _____

31) E-Mail address _____

32) Suspension and Debarment

Federal guidelines require grant recipients to obtain sufficient assurance that vendors are not suspended or debarred from participating in federal programs when contracts exceed \$25,000. By signing below you verify that no party to this agreement is excluded from receiving Federal contracts, certain subcontracts, and certain Federal financial and nonfinancial assistance and benefits, pursuant to the provisions of 31 U.S.C. 6101, note, E.O. 12549, E.O. 12689, 48 CFR 9.404, and each agency's codification of the Common Rule for Non-procurement suspension and debarment. [See <https://www.epls.gov/> for additional information.]

33) If the bid is accepted, the required Contract must be executed within fifteen (15) days after receipt of written notice of formal award of Contract.

34) Will you honor the submitted prices for purchase by other departments within Georgetown County and by other government entities who participate in cooperative purchasing with Georgetown County, South Carolina?

Yes No

35) Acceptance of Invitation for Bid Content: The contents of the successful IFB/RFP are included as if fully reproduced herein. Therefore, the selected contractor must be prepared to be bound by his/her proposal as submitted.

36) CERTIFICATION REGARDING DRUG-FREE WORKPLACE:

The undersigned certifies that the vendor listed below will provide a “drug-free workplace” as that term is defined in Section 44-107-30 of the Code of Laws of South Carolina, 1976, as amended, by the complying with the requirements set forth in title 44, Chapter 107.

Yes No

37) Any attempt by the vendor to influence the opinion of County Staff or County Council by discussion, promotion, advertising, misrepresentation of the submittal or purchasing process or any procedure to promote their offer will constitute a violation of the vendor submittal conditions and will cause the vendor’s submittal to be declared null and void.

38) The lowest or any proposal will not necessarily be accepted and the County reserves the right to award any portion thereof. I/We, the undersigned, hereby confirm that all the above noted documents for Bid/Request for Proposal No. 19-032 were received.

39)

INFORMATION ONLY:

- Our company accepts VISA government procurement cards.
- Our company does not accept VISA government procurement cards.

40) Printed Name of person binding bid _____

41) Signature (X) _____

42) Date _____

43) **IMPORTANT:** Execute acknowledgment of officer or agent who signs this document (use proper form on following pages)

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK.]

ACKNOWLEDGMENT OF PRINCIPAL, IF A CORPORATION:

State of: (_____)

Country of: (_____)SS

On this _____ day of _____, 20_____, before me personally came and appeared _____ to me Known, who, being by me duly sworn, did depose and say to me that he resides at _____, that he/she is the _____ of _____ the corporation described in and which executed the foregoing instrument is an impression of such seal; that it was so affixed by the order of the directors of said corporation, and that he signed his name thereto by like order.

(Seal) _____
Notary Public

ACKNOWLEDGMENT OF PRINCIPAL, IF A PARTNERSHIP:

State of (_____)

Country of (_____)

On this _____ day of _____, 20_____, before me personally came and appeared _____ to me known and known to me to described in and who executed the foregoing instrument and he acknowledged to me that he executed the same as and for the act and deed of said firm.

(Seal) _____
Notary Public

ACKNOWLEDGMENT OF PRINCIPAL, IF AN INDIVIDUAL:

State of (_____)

Country of (_____)

On this _____ day of _____, 20_____, before me personally came and appeared _____ to me known and known to me to be the person described in and who executed the forgoing instrument and acknowledged that he executed the same.

(Seal) _____
Notary Public

(Exhibits Continue on Following Pages)

EXHIBIT A



ADDENDA ACKNOWLEDGEMENT

BID #19-032, Beck Recreation Center Multi-Purpose Fields & Facilities

Mandatory Bid Submittal Form

COMPANY NAME: _____

- Addendum #1 Received Date: _____ Initialed By: _____
- Addendum #2 Received Date: _____ Initialed By: _____
- Addendum #3 Received Date: _____ Initialed By: _____
- Addendum #4 Received Date: _____ Initialed By: _____
- Addendum #5 Received Date: _____ Initialed By: _____
- Addendum #6 Received Date: _____ Initialed By: _____

Company Name: _____

Authorized Signature: _____

Printed Name: _____

[THE REMAINDER OF THIS PAGE IS BLANK]



EXHIBIT B

Bid #19-032, Beck Recreation Center Multi-Purpose Fields & Facilities

MATERIAL SUBSTITUTION REQUEST

Date: _____

We hereby submit for your review the following PRODUCT SUBSTITUTION of the specified material for the above listed project.

Section: _____

Paragraph: _____

Specified Material: _____

Attached is complete technical data of the PRODUCT SUBSTITUTION, highlighted or underlined for easy reading, including laboratory test, as necessary, in duplicate. Included is complete information on changes to the Project Manual Documents required by the proposed PRODUCT SUBSTITUTION for its proper installation.

A) The Trade Contractor, under whose transmittal this information is sent, has reviewed the PRODUCT SUBSTITUTION and agrees it is applicable to this project in the location described and agrees to warrant/guarantee the use of the PRODUCT SUBSTITUTION in the same manner he would the Specified Product.

Yes **No**

If not, explain: _____

B) Does the PRODUCT SUBSTITUTION affect the dimensions shown on the Drawings in ANY WAY?

Yes **No**

If so, how? _____

C) Does the undersigned have the approval of the Manufacturer/Supplier to pay for any changes to the building design, including engineering and detailing costs, caused by the requested PRODUCT SUBSTITUTION?

Yes **No**

If so, to what extent? _____

D) What effect does the PRODUCT SUBSTITUTION acceptance have on other trades?

None **Don't Know** **As follows:**

EXHIBIT C

**FORM OF NON-COLLUSION AFFIDAVIT OF PRIME PROPOSER / BIDDER
(Mandatory Bid Submittal Form)**

**State of South Carolina)
County of Georgetown)**

Being first duly sworn deposes and says that:

- (1) He / She is _____ of _____
The Bidder / Proposer that has submitted the attached Bid / Proposal;
- (2) He / She is fully informed respecting the preparation and contents of the attached Bid / Proposal and of all pertinent circumstances respecting such Bid / Proposal;
- (3) Such Bid / Proposal is genuine and is not a collusive or sham Bid / Proposal;
- (4) Neither the said Bidder / Proposer 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 / Proposer, firm or person to submit a collusive or sham Bid / Proposal 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 / Proposer, firm or person to fix the price or prices in the attached Bid / Proposal or of any other Bidder / Proposer, or to fix any overhead, profit or cost element of the Bid / Proposal price or the Bid / Proposal price of any other Bidder / Proposer, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Owner or any person interested in the proposed Contract; and
- (5) The price or prices quoted in the attached Bid / Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder / Proposer or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) _____

(Title)

Subscribed and sworn to before me this _____ day of _____, 2019
Notary Public in and for Georgetown County, South Carolina
My commission expires on: _____

EXHIBIT D
(Mandatory Bid Submittal Form)

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

**Request for Taxpayer
Identification Number and Certification**

**Give Form to the
requester. Do not
send to the IRS.**

▶ Go to www.irs.gov/FormW9 for instructions and the latest information.

Print or type. See Specific Instructions on page 3.	1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.	
	2 Business name/disregarded entity name, if different from above	
	3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only one of the following seven boxes.	4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
	<input type="checkbox"/> Individual/sole proprietor or single-member LLC <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate	Exempt payee code (if any) _____
	<input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____ Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is not disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.	Exemption from FATCA reporting code (if any) _____
	<input type="checkbox"/> Other (see instructions) ▶ _____	<i>(Applies to accounts maintained outside the U.S.)</i>
	5 Address (number, street, and apt. or suite no.) See instructions.	Requester's name and address (optional)
6 City, state, and ZIP code		
7 List account number(s) here (optional)		

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number											
				-			-				
or											
Employer identification number											
				-							

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here	Signature of U.S. person ▶	Date ▶
------------------	----------------------------	--------

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to www.irs.gov/FormW9.

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.

By signing the filled-out form, you:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income, and
4. Certify that FATCA code(s) entered on this form (if any) indicating that you are exempt from the FATCA reporting, is correct. See *What is FATCA reporting*, later, for further information.

Note: If you are a U.S. person and a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien;
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States;
- An estate (other than a foreign estate); or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax under section 1446 on any foreign partners' share of effectively connected taxable income from such business. Further, in certain cases where a Form W-9 has not been received, the rules under section 1446 require a partnership to presume that a partner is a foreign person, and pay the section 1446 withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid section 1446 withholding on your share of partnership income.

In the cases below, the following person must give Form W-9 to the partnership for purposes of establishing its U.S. status and avoiding withholding on its allocable share of net income from the partnership conducting a trade or business in the United States.

- In the case of a disregarded entity with a U.S. owner, the U.S. owner of the disregarded entity and not the entity;
- In the case of a grantor trust with a U.S. grantor or other U.S. owner, generally, the U.S. grantor or other U.S. owner of the grantor trust and not the trust; and
- In the case of a U.S. trust (other than a grantor trust), the U.S. trust (other than a grantor trust) and not the beneficiaries of the trust.

Foreign person. If you are a foreign person or the U.S. branch of a foreign bank that has elected to be treated as a U.S. person, do not use Form W-9. Instead, use the appropriate Form W-8 or Form 8233 (see Pub. 515, *Withholding of Tax on Nonresident Aliens and Foreign Entities*).

Nonresident alien who becomes a resident alien. Generally, only a nonresident alien individual may use the terms of a tax treaty to reduce or eliminate U.S. tax on certain types of income. However, most tax treaties contain a provision known as a "saving clause." Exceptions specified in the saving clause may permit an exemption from tax to continue for certain types of income even after the payee has otherwise become a U.S. resident alien for tax purposes.

If you are a U.S. resident alien who is relying on an exception contained in the saving clause of a tax treaty to claim an exemption from U.S. tax on certain types of income, you must attach a statement to Form W-9 that specifies the following five items.

1. The treaty country. Generally, this must be the same treaty under which you claimed exemption from tax as a nonresident alien.
2. The treaty article addressing the income.
3. The article number (or location) in the tax treaty that contains the saving clause and its exceptions.
4. The type and amount of income that qualifies for the exemption from tax.
5. Sufficient facts to justify the exemption from tax under the terms of the treaty article.

Example. Article 20 of the U.S.-China income tax treaty allows an exemption from tax for scholarship income received by a Chinese student temporarily present in the United States. Under U.S. law, this student will become a resident alien for tax purposes if his or her stay in the United States exceeds 5 calendar years. However, paragraph 2 of the first Protocol to the U.S.-China treaty (dated April 30, 1984) allows the provisions of Article 20 to continue to apply even after the Chinese student becomes a resident alien of the United States. A Chinese student who qualifies for this exception (under paragraph 2 of the first protocol) and is relying on this exception to claim an exemption from tax on his or her scholarship or fellowship income would attach to Form W-9 a statement that includes the information described above to support that exemption.

If you are a nonresident alien or a foreign entity, give the requester the appropriate completed Form W-8 or Form 8233.

Backup Withholding

What is backup withholding? Persons making certain payments to you must under certain conditions withhold and pay to the IRS 24% of such payments. This is called "backup withholding." Payments that may be subject to backup withholding include interest, tax-exempt interest, dividends, broker and barter exchange transactions, rents, royalties, nonemployee pay, payments made in settlement of payment card and third party network transactions, and certain payments from fishing boat operators. Real estate transactions are not subject to backup withholding.

You will not be subject to backup withholding on payments you receive if you give the requester your correct TIN, make the proper certifications, and report all your taxable interest and dividends on your tax return.

Payments you receive will be subject to backup withholding if:

1. You do not furnish your TIN to the requester,
2. You do not certify your TIN when required (see the instructions for Part II for details),
3. The IRS tells the requester that you furnished an incorrect TIN,
4. The IRS tells you that you are subject to backup withholding because you did not report all your interest and dividends on your tax return (for reportable interest and dividends only), or
5. You do not certify to the requester that you are not subject to backup withholding under 4 above (for reportable interest and dividend accounts opened after 1983 only).

Certain payees and payments are exempt from backup withholding. See *Exempt payee code*, later, and the separate Instructions for the Requester of Form W-9 for more information.

Also see *Special rules for partnerships*, earlier.

What is FATCA Reporting?

The Foreign Account Tax Compliance Act (FATCA) requires a participating foreign financial institution to report all United States account holders that are specified United States persons. Certain payees are exempt from FATCA reporting. See *Exemption from FATCA reporting code*, later, and the Instructions for the Requester of Form W-9 for more information.

Updating Your Information

You must provide updated information to any person to whom you claimed to be an exempt payee if you are no longer an exempt payee and anticipate receiving reportable payments in the future from this person. For example, you may need to provide updated information if you are a C corporation that elects to be an S corporation, or if you no longer are tax exempt. In addition, you must furnish a new Form W-9 if the name or TIN changes for the account; for example, if the grantor of a grantor trust dies.

Penalties

Failure to furnish TIN. If you fail to furnish your correct TIN to a requester, you are subject to a penalty of \$50 for each such failure unless your failure is due to reasonable cause and not to willful neglect.

Civil penalty for false information with respect to withholding. If you make a false statement with no reasonable basis that results in no backup withholding, you are subject to a \$500 penalty.

Criminal penalty for falsifying information. Willfully falsifying certifications or affirmations may subject you to criminal penalties including fines and/or imprisonment.

Misuse of TINs. If the requester discloses or uses TINs in violation of federal law, the requester may be subject to civil and criminal penalties.

Specific Instructions

Line 1

You must enter one of the following on this line; **do not** leave this line blank. The name should match the name on your tax return.

If this Form W-9 is for a joint account (other than an account maintained by a foreign financial institution (FFI)), list first, and then circle, the name of the person or entity whose number you entered in Part I of Form W-9. If you are providing Form W-9 to an FFI to document a joint account, each holder of the account that is a U.S. person must provide a Form W-9.

a. **Individual.** Generally, enter the name shown on your tax return. If you have changed your last name without informing the Social Security Administration (SSA) of the name change, enter your first name, the last name as shown on your social security card, and your new last name.

Note: ITIN applicant: Enter your individual name as it was entered on your Form W-7 application, line 1a. This should also be the same as the name you entered on the Form 1040/1040A/1040EZ you filed with your application.

b. **Sole proprietor or single-member LLC.** Enter your individual name as shown on your 1040/1040A/1040EZ on line 1. You may enter your business, trade, or “doing business as” (DBA) name on line 2.

c. **Partnership, LLC that is not a single-member LLC, C corporation, or S corporation.** Enter the entity’s name as shown on the entity’s tax return on line 1 and any business, trade, or DBA name on line 2.

d. **Other entities.** Enter your name as shown on required U.S. federal tax documents on line 1. This name should match the name shown on the charter or other legal document creating the entity. You may enter any business, trade, or DBA name on line 2.

e. **Disregarded entity.** For U.S. federal tax purposes, an entity that is disregarded as an entity separate from its owner is treated as a “disregarded entity.” See Regulations section 301.7701-2(c)(2)(iii). Enter the owner’s name on line 1. The name of the entity entered on line 1 should never be a disregarded entity. The name on line 1 should be the name shown on the income tax return on which the income should be reported. For example, if a foreign LLC that is treated as a disregarded entity for U.S. federal tax purposes has a single owner that is a U.S. person, the U.S. owner’s name is required to be provided on line 1. If the direct owner of the entity is also a disregarded entity, enter the first owner that is not disregarded for federal tax purposes. Enter the disregarded entity’s name on line 2, “Business name/disregarded entity name.” If the owner of the disregarded entity is a foreign person, the owner must complete an appropriate Form W-8 instead of a Form W-9. This is the case even if the foreign person has a U.S. TIN.

Line 2

If you have a business name, trade name, DBA name, or disregarded entity name, you may enter it on line 2.

Line 3

Check the appropriate box on line 3 for the U.S. federal tax classification of the person whose name is entered on line 1. Check only one box on line 3.

IF the entity/person on line 1 is a(n) . . .	THEN check the box for . . .
• Corporation	Corporation
• Individual • Sole proprietorship, or • Single-member limited liability company (LLC) owned by an individual and disregarded for U.S. federal tax purposes.	Individual/sole proprietor or single-member LLC
• LLC treated as a partnership for U.S. federal tax purposes, • LLC that has filed Form 8832 or 2553 to be taxed as a corporation, or • LLC that is disregarded as an entity separate from its owner but the owner is another LLC that is not disregarded for U.S. federal tax purposes.	Limited liability company and enter the appropriate tax classification. (P= Partnership; C= C corporation; or S= S corporation)
• Partnership	Partnership
• Trust/estate	Trust/estate

Line 4, Exemptions

If you are exempt from backup withholding and/or FATCA reporting, enter in the appropriate space on line 4 any code(s) that may apply to you.

Exempt payee code.

- Generally, individuals (including sole proprietors) are not exempt from backup withholding.
- Except as provided below, corporations are exempt from backup withholding for certain payments, including interest and dividends.
- Corporations are not exempt from backup withholding for payments made in settlement of payment card or third party network transactions.
- Corporations are not exempt from backup withholding with respect to attorneys’ fees or gross proceeds paid to attorneys, and corporations that provide medical or health care services are not exempt with respect to payments reportable on Form 1099-MISC.

The following codes identify payees that are exempt from backup withholding. Enter the appropriate code in the space in line 4.

- 1—An organization exempt from tax under section 501(a), any IRA, or a custodial account under section 403(b)(7) if the account satisfies the requirements of section 401(f)(2)
- 2—The United States or any of its agencies or instrumentalities
- 3—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities
- 4—A foreign government or any of its political subdivisions, agencies, or instrumentalities
- 5—A corporation
- 6—A dealer in securities or commodities required to register in the United States, the District of Columbia, or a U.S. commonwealth or possession
- 7—A futures commission merchant registered with the Commodity Futures Trading Commission
- 8—A real estate investment trust
- 9—An entity registered at all times during the tax year under the Investment Company Act of 1940
- 10—A common trust fund operated by a bank under section 584(a)
- 11—A financial institution
- 12—A middleman known in the investment community as a nominee or custodian
- 13—A trust exempt from tax under section 664 or described in section 4947

The following chart shows types of payments that may be exempt from backup withholding. The chart applies to the exempt payees listed above, 1 through 13.

IF the payment is for . . .	THEN the payment is exempt for . . .
Interest and dividend payments	All exempt payees except for 7
Broker transactions	Exempt payees 1 through 4 and 6 through 11 and all C corporations. S corporations must not enter an exempt payee code because they are exempt only for sales of noncovered securities acquired prior to 2012.
Barter exchange transactions and patronage dividends	Exempt payees 1 through 4
Payments over \$600 required to be reported and direct sales over \$5,000 ¹	Generally, exempt payees 1 through 5 ²
Payments made in settlement of payment card or third party network transactions	Exempt payees 1 through 4

¹ See Form 1099-MISC, Miscellaneous Income, and its instructions.

² However, the following payments made to a corporation and reportable on Form 1099-MISC are not exempt from backup withholding: medical and health care payments, attorneys' fees, gross proceeds paid to an attorney reportable under section 6045(f), and payments for services paid by a federal executive agency.

Exemption from FATCA reporting code. The following codes identify payees that are exempt from reporting under FATCA. These codes apply to persons submitting this form for accounts maintained outside of the United States by certain foreign financial institutions. Therefore, if you are only submitting this form for an account you hold in the United States, you may leave this field blank. Consult with the person requesting this form if you are uncertain if the financial institution is subject to these requirements. A requester may indicate that a code is not required by providing you with a Form W-9 with "Not Applicable" (or any similar indication) written or printed on the line for a FATCA exemption code.

A—An organization exempt from tax under section 501(a) or any individual retirement plan as defined in section 7701(a)(37)

B—The United States or any of its agencies or instrumentalities

C—A state, the District of Columbia, a U.S. commonwealth or possession, or any of their political subdivisions or instrumentalities

D—A corporation the stock of which is regularly traded on one or more established securities markets, as described in Regulations section 1.1472-1(c)(1)(i)

E—A corporation that is a member of the same expanded affiliated group as a corporation described in Regulations section 1.1472-1(c)(1)(i)

F—A dealer in securities, commodities, or derivative financial instruments (including notional principal contracts, futures, forwards, and options) that is registered as such under the laws of the United States or any state

G—A real estate investment trust

H—A regulated investment company as defined in section 851 or an entity registered at all times during the tax year under the Investment Company Act of 1940

I—A common trust fund as defined in section 584(a)

J—A bank as defined in section 581

K—A broker

L—A trust exempt from tax under section 664 or described in section 4947(a)(1)

M—A tax exempt trust under a section 403(b) plan or section 457(g) plan

Note: You may wish to consult with the financial institution requesting this form to determine whether the FATCA code and/or exempt payee code should be completed.

Line 5

Enter your address (number, street, and apartment or suite number). This is where the requester of this Form W-9 will mail your information returns. If this address differs from the one the requester already has on file, write NEW at the top. If a new address is provided, there is still a chance the old address will be used until the payor changes your address in their records.

Line 6

Enter your city, state, and ZIP code.

Part I. Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. If you are a resident alien and you do not have and are not eligible to get an SSN, your TIN is your IRS individual taxpayer identification number (ITIN). Enter it in the social security number box. If you do not have an ITIN, see *How to get a TIN* below.

If you are a sole proprietor and you have an EIN, you may enter either your SSN or EIN.

If you are a single-member LLC that is disregarded as an entity separate from its owner, enter the owner's SSN (or EIN, if the owner has one). Do not enter the disregarded entity's EIN. If the LLC is classified as a corporation or partnership, enter the entity's EIN.

Note: See *What Name and Number To Give the Requester*, later, for further clarification of name and TIN combinations.

How to get a TIN. If you do not have a TIN, apply for one immediately. To apply for an SSN, get Form SS-5, Application for a Social Security Card, from your local SSA office or get this form online at www.SSA.gov. You may also get this form by calling 1-800-772-1213. Use Form W-7, Application for IRS Individual Taxpayer Identification Number, to apply for an ITIN, or Form SS-4, Application for Employer Identification Number, to apply for an EIN. You can apply for an EIN online by accessing the IRS website at www.irs.gov/Businesses and clicking on Employer Identification Number (EIN) under Starting a Business. Go to www.irs.gov/Forms to view, download, or print Form W-7 and/or Form SS-4. Or, you can go to www.irs.gov/OrderForms to place an order and have Form W-7 and/or SS-4 mailed to you within 10 business days.

If you are asked to complete Form W-9 but do not have a TIN, apply for a TIN and write "Applied For" in the space for the TIN, sign and date the form, and give it to the requester. For interest and dividend payments, and certain payments made with respect to readily tradable instruments, generally you will have 60 days to get a TIN and give it to the requester before you are subject to backup withholding on payments. The 60-day rule does not apply to other types of payments. You will be subject to backup withholding on all such payments until you provide your TIN to the requester.

Note: Entering "Applied For" means that you have already applied for a TIN or that you intend to apply for one soon.

Caution: A disregarded U.S. entity that has a foreign owner must use the appropriate Form W-8.

Part II. Certification

To establish to the withholding agent that you are a U.S. person, or resident alien, sign Form W-9. You may be requested to sign by the withholding agent even if item 1, 4, or 5 below indicates otherwise.

For a joint account, only the person whose TIN is shown in Part I should sign (when required). In the case of a disregarded entity, the person identified on line 1 must sign. Exempt payees, see *Exempt payee code*, earlier.

Signature requirements. Complete the certification as indicated in items 1 through 5 below.

1. Interest, dividend, and barter exchange accounts opened before 1984 and broker accounts considered active during 1983.

You must give your correct TIN, but you do not have to sign the certification.

2. Interest, dividend, broker, and barter exchange accounts opened after 1983 and broker accounts considered inactive during 1983.

You must sign the certification or backup withholding will apply. If you are subject to backup withholding and you are merely providing your correct TIN to the requester, you must cross out item 2 in the certification before signing the form.

3. Real estate transactions. You must sign the certification. You may cross out item 2 of the certification.

4. Other payments. You must give your correct TIN, but you do not have to sign the certification unless you have been notified that you have previously given an incorrect TIN. "Other payments" include payments made in the course of the requester's trade or business for rents, royalties, goods (other than bills for merchandise), medical and health care services (including payments to corporations), payments to a nonemployee for services, payments made in settlement of payment card and third party network transactions, payments to certain fishing boat crew members and fishermen, and gross proceeds paid to attorneys (including payments to corporations).

5. Mortgage interest paid by you, acquisition or abandonment of secured property, cancellation of debt, qualified tuition program payments (under section 529), ABLE accounts (under section 529A), IRA, Coverdell ESA, Archer MSA or HSA contributions or distributions, and pension distributions. You must give your correct TIN, but you do not have to sign the certification.

What Name and Number To Give the Requester

For this type of account:	Give name and SSN of:
1. Individual	The individual
2. Two or more individuals (joint account) other than an account maintained by an FFI	The actual owner of the account or, if combined funds, the first individual on the account ¹
3. Two or more U.S. persons (joint account maintained by an FFI)	Each holder of the account
4. Custodial account of a minor (Uniform Gift to Minors Act)	The minor ²
5. a. The usual revocable savings trust (grantor is also trustee)	The grantor-trustee ¹
b. So-called trust account that is not a legal or valid trust under state law	The actual owner ¹
6. Sole proprietorship or disregarded entity owned by an individual	The owner ³
7. Grantor trust filing under Optional Form 1099 Filing Method 1 (see Regulations section 1.671-4(b)(2)(i)(A))	The grantor*
For this type of account:	Give name and EIN of:
8. Disregarded entity not owned by an individual	The owner
9. A valid trust, estate, or pension trust	Legal entity ⁴
10. Corporation or LLC electing corporate status on Form 8832 or Form 2553	The corporation
11. Association, club, religious, charitable, educational, or other tax-exempt organization	The organization
12. Partnership or multi-member LLC	The partnership
13. A broker or registered nominee	The broker or nominee

For this type of account:	Give name and EIN of:
14. Account with the Department of Agriculture in the name of a public entity (such as a state or local government, school district, or prison) that receives agricultural program payments	The public entity
15. Grantor trust filing under the Form 1041 Filing Method or the Optional Form 1099 Filing Method 2 (see Regulations section 1.671-4(b)(2)(i)(B))	The trust

¹ List first and circle the name of the person whose number you furnish. If only one person on a joint account has an SSN, that person's number must be furnished.

² Circle the minor's name and furnish the minor's SSN.

³ You must show your individual name and you may also enter your business or DBA name on the "Business name/disregarded entity" name line. You may use either your SSN or EIN (if you have one), but the IRS encourages you to use your SSN.

⁴ List first and circle the name of the trust, estate, or pension trust. (Do not furnish the TIN of the personal representative or trustee unless the legal entity itself is not designated in the account title.) Also see *Special rules for partnerships*, earlier.

*Note: The grantor also must provide a Form W-9 to trustee of trust.

Note: If no name is circled when more than one name is listed, the number will be considered to be that of the first name listed.

Secure Your Tax Records From Identity Theft

Identity theft occurs when someone uses your personal information such as your name, SSN, or other identifying information, without your permission, to commit fraud or other crimes. An identity thief may use your SSN to get a job or may file a tax return using your SSN to receive a refund.

To reduce your risk:

- Protect your SSN,
- Ensure your employer is protecting your SSN, and
- Be careful when choosing a tax preparer.

If your tax records are affected by identity theft and you receive a notice from the IRS, respond right away to the name and phone number printed on the IRS notice or letter.

If your tax records are not currently affected by identity theft but you think you are at risk due to a lost or stolen purse or wallet, questionable credit card activity or credit report, contact the IRS Identity Theft Hotline at 1-800-908-4490 or submit Form 14039.

For more information, see Pub. 5027, Identity Theft Information for Taxpayers.

Victims of identity theft who are experiencing economic harm or a systemic problem, or are seeking help in resolving tax problems that have not been resolved through normal channels, may be eligible for Taxpayer Advocate Service (TAS) assistance. You can reach TAS by calling the TAS toll-free case intake line at 1-877-777-4778 or TTY/TDD 1-800-829-4059.

Protect yourself from suspicious emails or phishing schemes.

Phishing is the creation and use of email and websites designed to mimic legitimate business emails and websites. The most common act is sending an email to a user falsely claiming to be an established legitimate enterprise in an attempt to scam the user into surrendering private information that will be used for identity theft.

The IRS does not initiate contacts with taxpayers via emails. Also, the IRS does not request personal detailed information through email or ask taxpayers for the PIN numbers, passwords, or similar secret access information for their credit card, bank, or other financial accounts.

If you receive an unsolicited email claiming to be from the IRS, forward this message to phishing@irs.gov. You may also report misuse of the IRS name, logo, or other IRS property to the Treasury Inspector General for Tax Administration (TIGTA) at 1-800-366-4484. You can forward suspicious emails to the Federal Trade Commission at spam@uce.gov or report them at www.ftc.gov/complaint. You can contact the FTC at www.ftc.gov/idtheft or 877-IDTHEFT (877-438-4338). If you have been the victim of identity theft, see www.IdentityTheft.gov and Pub. 5027.

Visit www.irs.gov/IdentityTheft to learn more about identity theft and how to reduce your risk.

Privacy Act Notice

Section 6109 of the Internal Revenue Code requires you to provide your correct TIN to persons (including federal agencies) who are required to file information returns with the IRS to report interest, dividends, or certain other income paid to you; mortgage interest you paid; the acquisition or abandonment of secured property; the cancellation of debt; or contributions you made to an IRA, Archer MSA, or HSA. The person collecting this form uses the information on the form to file information returns with the IRS, reporting the above information. Routine uses of this information include giving it to the Department of Justice for civil and criminal litigation and to cities, states, the District of Columbia, and U.S. commonwealths and possessions for use in administering their laws. The information also may be disclosed to other countries under a treaty, to federal and state agencies to enforce civil and criminal laws, or to federal law enforcement and intelligence agencies to combat terrorism. You must provide your TIN whether or not you are required to file a tax return. Under section 3406, payers must generally withhold a percentage of taxable interest, dividend, and certain other payments to a payee who does not give a TIN to the payer. Certain penalties may also apply for providing false or fraudulent information.

EXHIBIT E

**INDEMNIFICATION
(Mandatory Bid Submittal Form)**

The Bidder / Proposer will indemnify and hold harmless the Owner, Georgetown County, South Carolina and their agents and employees from and against all claims, damages, losses and expenses, including attorney's fees, arising out of or resulting from the performance of the Work provided that any such claims, damages, loss, or expense is attributable to bodily injury, sickness, disease or death, injury to or destruction of tangible property, including the loss of use resulting there from, and is caused by any negligent or willful act or omission of the Bidder / Proposer, and anyone directly or indirectly employed by him/her or anyone for whose acts any of them may be liable.

In any and all claims against the Owner, Georgetown County, South Carolina or any of their agents and / or employees by an employee of the Bidder / Proposer, and 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 to the amount or type of damages, compensation or benefits payable by or for the Bidder / Proposer under the Worker's Compensation Acts, Disability Benefit Acts, or other employee benefit acts.

The obligation of the Bidder / Proposer under this paragraph shall not extend to the liability of Georgetown County, South Carolina or its agents and / or employees arising out of the reports, surveys, Change Orders, designs or Technical Specifications.

BIDDER / PROPOSER: _____

BY: _____

DATE: _____

TELEPHONE NO.: _____

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EXHIBIT F

**LIST OF PRIME AND SUBCONTRACTORS
(Mandatory Bid Submittal Form)**

The undersigned states that the following is a full and complete list of proposed prime contractor and subcontractors on this Project and the class of work to be performed by each, and that such list will not be added to nor altered without the written consent of the Owner.

Prime Contractor, Subcontractor Consultants and Address	Class of Work to be Performed
1) _____ _____	_____
2) _____ _____	_____
3) _____ _____	_____
4) _____ _____	_____
5) _____ _____	_____
6) _____ _____	_____

Date: _____

Firm Name: _____

Signed: _____

Title: _____

EXHIBIT G

**STATEMENT OF EXPERIENCE
(Mandatory Bid Submittal Form)**

The Bidder/Proposer is requested to state below what work of similar scope and complexity he/she has successfully completed, and to provide references that will enable the Owner to judge his/her experience, skill and business standing and his/her ability to conduct the Work in conformance with the requirements of the Construction Contract Documents. The County requests a minimum of three (3) references from the Primary Contractor and three (3) references for each Subcontractor that is listed in Exhibit F. The Bidder/Proposer may print as many pages as necessary to fulfill this requirement.

Project and Location

Reference

1) _____ _____ _____	_____ _____ _____
2) _____ _____ _____	_____ _____ _____
3) _____ _____ _____	_____ _____ _____

Dated: _____

Firm Name: _____

Signed: _____

Title: _____

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EXHIBIT H

UNIT PRICE SCHEDULE (Mandatory Bid Submittal Form)

When changes in the Work are ordered by the Owner, and such changes involve the following items, the following Unit Prices will be used to calculate adjustments to the Contract Sum. These Unit Prices shall be for the Work as specified, including all labor, materials, equipment, accessories, shipping, preparation, insurance testing, overhead, profit, applicable taxes, permits, fees and all other associated costs for the finished and completed Work. All Unit Prices for utility conduits shall include sweeps, bends, couplings, caps, fittings, etc, which shall be included in the Unit Price per linear foot. The pavement Unit Prices shall include all striping and pavement markings that are required to complete the Work. Unit Prices for undercut – soils shall include material in place, surveyed and compacted pursuant to the Contract Documents.

ITEM	DESCRIPTION	UNIT	UNIT PRICE (\$)
1	CONCRETE DEMOLITION	1 SF	
2	ASPHALT DEMOLITION	1 SY	
3	IMPORTED FILL	1 CY	
4	MUCK AND DISPOSE OFF SITE	1 CY	
5	TEMPORARY BARRIER FENCE	1 LF	
6	ASPHALT PAVING	1 SY	
7	CONCRETE CURB AND GUTTER - 18"	1 LF	
8	CONCRETE SIDEWALK / PAVING (4" THICK)	1 SY	
9	12" DRAIN INLET (FIELD)	1 EA	
10	6" PVC DRAIN PIPE	1 LF	
11	GRATE INLET	1 EA	
12	12" HDPE PIPE	1 LF	
13	15" HDPE PIPE	1 LF	
14	18" HDPE PIPE	1 LF	
15	24" HDPE PIPE	1 LF	
16	6" PVC SEWER SERVICE	1 LF	
17	1" WATER SERVICE LINE	1 LF	
18	4' CHAIN LINK FENCE	1 LF	
19	4' CHAIN LINK FENCE DOUBLE 4' GATE	1 EA	

20	6' CHAIN LINK FENCE	1 LF	
21	6' CHAIN LINK FENCE DOUBLE 4' GATE	1 EA	
22	ASPHALT TRACK AND STRIPING	1 LS	
23	1" ELECTRICAL CONDUIT	1 LF	
24	1-1/2" ELECTRICAL CONDUIT	1 LF	
25	2" ELECTRICAL CONDUIT	1 LF	
26	FIELD ROOT ZONE MIX	1 CY	
27	BERMUDA SOD	1 SF	
28	BERMUDA SEED	1 SF	
29	CRAPE MYRTLE – 3" CAL.	1 EA	
30	REGAL PINK MUHLY - 3 GALLON	1 EA	
31	TOPSOIL / PLANTING MIX (SCREENED FOR PLANT BEDS)	1 CY	

Dated: _____ **Bidder / Proposer:** _____

Signed: _____

Title: _____

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EXHIBIT I

RESIDENCE CERTIFICATION FOR LOCAL PREFERENCE (Mandatory Bid Submittal Form)

WHEREAS, Georgetown County Council desires to further its support of local businesses when awarding contracts for the provision of supplies and construction services to the County through its established procurement procedures.

THEREFOR pursuant to Georgetown County, SC Ordinance #2014-02 as adopted, §2-50 Local Preference Option, the Georgetown County Purchasing Officer requests each offeror provide Residence Certification. The Local Preference Option provides some restrictions on the awarding of governmental contracts; provisions of which are stated below:

Sec 2-50. Local Preference Option

1. A vendor shall be deemed a Local Georgetown County vendor for the purposes of this Section if such vendor is an individual, partnership, association or corporation that is authorized to transact business within the State, maintains an office in Georgetown County, and maintains a representative inventory or commodities within the County on which the bid is submitted, and has paid all taxes duly assessed.
2. This option allows the lowest local Bidder whose bid is within five-percent (5%) of the lowest non-local Bidder to match the bid submitted by the non-local Bidder and thereby be awarded the contract. This preference shall apply only when (a) the total dollar purchase is \$10,000 or more; (b) the vendor has a physical business address located and operating within the limits of Georgetown County and has been doing business in the County for a period of twelve (12) months or more; and (c) the vendor provides proof of payment of all applicable Georgetown County taxes and fees if so requested.
3. Should the lowest responsible and responsive Georgetown County bidder not exercise its right to match the bid as granted herein, the next lowest qualified Georgetown County bidder shall have that right and so on. The right to exercise the right to match the bid shall be exercised within 24 hours of notification of the right to match the non-Georgetown County bidder's bid.
4. In order to qualify for the local preference authorized by this Section, the vendor seeking same shall be required to submit with its bid a statement containing relevant information which demonstrates compliance with the provisions of this Section. This statement shall be on a form provided by the County purchasing department and shall be signed under penalty of perjury. Failure to provide such affidavit at the time the bidder submits its bid shall constitute a waiver of any claim for preference.
5. For all contracts for architecture, professional engineering, or other professional services governed by § 2-56, Architect-Engineer and Land Surveying Services – Public Announcement and Selection Process, the county shall include the local business status of a firm among the factors considered when selecting which firms are “most highly

qualified.” In determining which firm is the “most qualified” for purposes of negotiating a satisfactory contract, preference shall be given to a local business where all other relevant factors are equal.

6. Local preference shall not apply to the following categories of contracts:

- (a) Goods or services provided under a cooperative purchasing agreement or similar “piggyback” contract;
- (b) Contracts for professional services except as provided for in section five (§5) above;
- (c) Purchases or contracts which are funded, in whole or in part, by a governmental or other funding entity, where the terms and conditions of receipt of the funds prohibit the preference;
- (d) Purchases or contracts made pursuant to a noncompetitive award process, unless otherwise provided by this section; or
- (e) Any bid announcement which specifically provides that the general local preference policies set forth in this section are suspended due to the unique nature of the goods or services sought, the existence of an emergency as found by either the county council or county administrator, or where such suspension is, in the opinion of the county attorney, required by law.

I certify that [Company Name] _____ is a **Resident Bidder** of Georgetown County as defined in Ordinance #2014-02, (see §1. above) and our local place of business within Georgetown County is: _____

I certify that [Company Name] _____ is a **Non-Resident Bidder** of Georgetown County as defined in Ordinance #2014-02, and our principal place of business is _____ [City and State].

(X) _____
Signature of Company Officer

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EXHIBIT J
EXCEPTIONS PAGE

(Mandatory Bid Submittal Form)

List any areas where you cannot or will not comply with the specifications or terms contained within the bid documentation. If none, write "NONE".

EXHIBIT K

**CADD Files Release Form
(Mandatory Bid Submittal Form)**

Dear Contractor:

In response to your request, we agree to the transmission of the digital base files for the construction plans for the referenced project in AutoCADD Release 2014 of the project upon receipt of this signed acceptance letter.

The electronic files will be provided for your use on the referenced project. Data stored on electronic media can deteriorate or be modified without Consultant's knowledge. Your Firm agrees that it will accept responsibility for the completeness, correctness, or readability of the electronic media. This digital information will be provided for your convenience and preparation of other documents. Due to the nature of electronic files, graphic displays of structures, etc. may not be to scale for readability. It is the responsibility of the recipient to confirm that the digital file represents the contract documents. Consultant assumes no responsibility for damages or errors resulting from the misinterpretation of digital information.

By accepting these files, the recipient hereby acknowledges and holds harmless from all liability Consultant for the accuracy of the digital information and that the recipient is responsible for construction of the project in accordance with the contract documents.

Company: _____

Name of Contractor: _____
(printed)

Email Address: _____

Office Phone: _____

Office Fax: _____

Mobile Phone: _____

Signature: _____ Title: _____

Date: _____

END OF SECTION 00300

IN WITNESS WHEREOF, the Principal and Surety have hereunto caused this Bond to be duly executed and acknowledged by their appropriate officials as set forth below this _____ day of _____, 2019.

PRINCIPAL (If Sole Proprietor or Partnership)

(Firm Name)

ATTEST

By: _____
(SEAL)

Title (Sole Proprietor or Partner)

PRINCIPAL (If Corporation)

(Corporate Name)

By: _____
(President)

Attest: _____
(Secretary)

(Impress Corporate Seal)

COUNTERSIGNED BY
RESIDENT SOUTH CAROLINA
AGENT OF SURETY:

SURETY:

(Copy of Agent's current license
as issued by State of South Carolina
Insurance Commissioner

By: _____
Attorney-In-Fact
(Power of Attorney Must Be Attached)

(Impress Corporate Seal)

END OF SECTION 00400

SECTION 00500

SAMPLE CONTRACT



STATE OF SOUTH CAROLINA)
GEORGETOWN COUNTY)

CONSTRUCTION
CONTRACT

THIS CONTRACT made and entered into this ____ day of ____ 20____, by and between Georgetown County, hereinafter referred to as the "Owner", a body politic and corporate and political subdivision of the State of South Carolina, whose administrative address is: 129 Screven Street, Georgetown, South Carolina 29440; and _____ hereinafter referred to as the "Contractor", a corporation formed and existing under the laws of the State of South Carolina and authorized to do business within the State of South Carolina, whose administrative address is: _____

SAMPLE

IN WITNESS WHEREOF:

WHEREAS, the Owner has a project entitled _____, hereinafter referred to as the "Project", and;

WHEREAS, the Contractor has submitted the lowest responsible and responsive bid for the Project at \$ _____ and the Owner has awarded the Project to the Contractor; and

NOW, THEREFORE, in consideration of the mutual promises and covenants contained herein, as well as other good and valuable consideration not specifically mentioned, the parties agree as follows:

- 1. The Contractor, for and in consideration of the payments hereinafter specified and agreed to be made by the Owner, hereby covenants and agrees to furnish and deliver all materials required, to do and perform all the work and labor, in a satisfactory and workmanlike manner, required to complete the Project within the time specified, in strict and entire conformity with the Plans, Technical Specifications and other Contract documents, on file at Georgetown County, which are duly approved by the Owner and which said Plans, Specifications and other Contract documents are hereby made part of this Contract as fully and with the same effects as if the same had been set forth at length in the body of this Contract.
2. The Contractor hereby agrees to indemnify, defend and hold the Owner and, the Engineer, and each of their agents, representatives, directors, officers, and employees harmless from any and all liabilities, losses, damages, penalties, judgments, awards, claims, demands, costs, expenses, (including reasonable attorney's fees and court costs), actions, lawsuits or other proceedings arising directly or indirectly, in whole or in part, out of the negligence or willful acts or omissions of the Contractor, Trade Subcontractors, or their respective agents, directors, officers or employees in connection with this Agreement or in any way with the services or Work described herein, any occurrence at the Project site, or any occurrence arising in connection with or at the Project site or in connection with the Work, whether within or beyond the scope of its duties hereunder.

3. The Project has been designed by _____ whose office is located at _____, and who will act as ENGINEER in connection with completion of the Work in accordance with the Contract Documents.
4. The project will be considered substantially complete upon completion of all items listed in the Bid Form and appurtenances in accordance with the Contract Documents, including successful performance of all testing requirements.
5. The Contractor's indemnity and defense obligations under this Contract shall be absolute notwithstanding any provision contained herein or elsewhere to the contrary, and shall survive Final Completion and Final Payment for a period equal to the statute of limitations for any action which could be brought against the Owner or its agents, officers, directors and employees and shall continue through the duration of any action brought during the applicable time periods.
6. The Contractor agrees to indemnify, defend and hold the Owner, and the Engineer, and each of their agents, representatives, officers, directors and employees, harmless from all costs, damages and expenses, including reasonable attorney's fees, incurred by the Owner and its consultants by virtue of any claim or claims filed by any Trade Subcontractor, mechanic, laborer, or materialman making claims arising from the performance of the Work by, through, or under the Contractor, provided the Contractor has received from the Owner all amounts properly due under this Contract concerning the claim. The Contractor shall execute and deliver to the Owner's title insurer similar indemnifications or such other document as such title insurer shall reasonably request in order to protect it against lien claims from Trade Subcontractors. The Contractor also hereby agrees to indemnify and hold harmless, protect and defend the Owner and its consultants from and against any liability, claim, judgment, loss or damage, including, but not limited, to direct damages, attorney's fees, court costs and expenses of collection, occasioned in whole or in part by the sole failure of the Contractor, and its Trade Subcontractors to comply with any of the terms or provisions of this Contract.
7. In any and all claims against the Owner, by any employee of the Contractor or Trade Subcontractor, anyone directly or indirectly employed by any of them, their agent or anyone for whose acts any of the Contractor or Trade Subcontractors may be liable, the indemnification obligation under this Paragraph 2 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Trade Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.
8. The Owner hereby agrees to pay to the Contractor for the said work, when fully completed, the total sum of _____ (the said sum being the total of the Contractor's bid, a copy of which is attached hereto and, pro tanto, made a part hereof for all purposes), subject to such additions and deductions as may be provided for in the Contract Documents. In the event the bid contains multiple pay items, it is understood that the amount to be paid shall be the total based on the unit prices, together with lump sum prices, contained in said bid, for the work actually completed. Payments on accounts will be made as customarily provided by the County and consistent with applicable County procedures. The Contractor shall submit bills for fees or other compensation for services or expenses in detail sufficient for a proper pre-audit and post audit thereof. Any unit of provision of goods and services must be approved in writing by the Owner prior to payment.
9. The Owner may unilaterally cancel this Contract and the goods and services there under in the event that the Contractor fails and refuses to allow public access to all documents, papers, letters, or other material subject to the provisions of the applicable South Carolina Code of Laws, made or received by the Contractor in conjunction with this Contract.
10. This Contract has been executed by the parties prior to the rendering of any goods or services by the Contractor.

11. The Contractor shall provide a payment and performance bond (the "Bond") to the Owner meeting the requirements of applicable South Carolina Code of Laws, The Georgetown County Procurement Ordinance, as amended, and associated bid documents referenced herein, which by virtue of executing this contract the Contractor has accepted in the sum of \$_____ and shall cause the Bond to be recorded with the Notice of Commencement in the Public Records of Georgetown County, South Carolina.
12. This Contract shall be subordinate to any rule, regulation, order or law of the United States of America, or the State of South Carolina, respectively.
13. Contractor and its employees shall promptly observe and comply with all applicable provisions of any Federal, State and local laws, ordinances, rules or regulations which govern or apply to the goods or services rendered by Contractor hereunder including the wages paid by Contractor to its employees. Contractors shall require all of its Subcontractors to comply with the provisions of this paragraph.
14. Contractor shall procure and keep in force during the term of this contract all necessary insurance (including but not limited to general liability, casualty, workers compensation, and automobile), licenses, registrations, certificates, permits and other authorizations as are required by law in order for Contractor to render its services hereunder. Contractor shall require all of its Subcontractors to comply with the provisions of this paragraph.
15. All remedies provided in this Contract shall be deemed cumulative and additional and not in lieu of or exclusive of each other or of any other remedy available to any party at law or in equity. In the event one party shall prevail in any action (including appellate proceedings), at law or in equity arising hereunder, the losing party will pay all costs, expense, reasonable attorneys' fees and all other actual and reasonable expenses incurred in the defense and/or prosecution of any legal or arbitration proceedings, including, but not limited to, those for paralegal, investigative, legal support services and actual fees charged by expert witnesses for testimony and analysis, incurred by the prevailing party referable thereto.
16. Contractor represents and warrants unto Owner that no officer, employee or agent of Owner has any interest, either directly or indirectly, in the business or property for/on which the Contractor to conduct activities hereunder. Contractor further represents and warrants to Owner that it has not employed or retained any third party person, other than a bona fide employee working solely for Contractor, to bid, solicit or secure this Contract, that it has not paid or agreed to any person, company, corporation, individual or firm, other than a bona fide employee working solely for Contractor, any fee, commission, percentage, gift, or any other consideration contingent upon or resulting from the award or making of this Contract, and that it has not agreed, as an express or implied condition for obtaining this Contract, to employ or retain the services of any firm or person in connection with carrying out this Contract. Contractor assures that it will insert the above provision in each of its Subcontractor agreements relating to the services to be performed hereunder.
17. The headings of the sections of this Contract are for the purpose of convenience only and shall not be deemed to expand or limit the provisions contained in such sections.
18. This Contract, including all Contract documents such as, but not limited to, bid documents and procurement packages, constitutes the entire agreement between the parties and shall supersede and replace all prior agreements or understandings, written or oral, relating to the matters set forth herein.

19. This Contract shall not be amended or modified other than in writing signed by the parties hereto. Notwithstanding the foregoing, any Amendments that are not being paid for, in whole or in part, with funds granted by the United States or State of South Carolina need not be approved by them.

20. The validity, interpretation, construction and effect of this Contract shall be in accordance with and be governed by the laws of the State of South Carolina. In the event any provision hereof shall be finally determined to be unenforceable, or invalid, such unenforceability or invalidity shall not affect the remaining provisions of this Contract which shall remain in full force and effect.

21. All Construction Contracts Over \$2,000:

(b.) Davis-Bacon and Related Acts Requirements. These contracts need to include a provision for compliance with the Davis-Bacon Act (40 USC 276a to a—7) and the Department of Labor implementing regulations (29 CFR Part 5). Under this Act, Contractors are required to include the contract provisions in Section 5.5 (a) of 29 CFR Part 5, and to pay wages to laborers and mechanics at a rate not less than the minimum wages specified in the wage determination made by the Secretary of Labor. In addition, Contractors shall be required to pay wages not less than the minimum wages specified in the wage determination made by the Secretary of Labor. In addition, Contractors shall be required to pay wages not less often than once a week.

(c.) Contract Work Hours and Safety Standard Act Requirements. The contracts must include a provision for compliance with Sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 USC 327-330) as supplemented by the Department of Labor regulations (29 CFR Part 5). Under Section 103 of the Act, each Contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard workweek of 40 hours. Work in excess of the standard workweek is permissible provided that the worker is compensated at a rate not less than one times the basic rate of pay for all hours worked in excess of 40 hours in the workweek. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to health and safety as determined under construction, safety and health standards promulgated by the Secretary of Labor. These requirements do not apply to the purchases of supplies, materials, or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

(d.) Copeland “Anti-Kickback” Act Requirements. All construction contracts over \$2,000.00 must include a provision for compliance with the Copeland “Anti-Kickback” Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR Part 3). This act provides that each Contractor shall be prohibited from inducing, by any means, persons employed in the construction, completion, or repair of public work to give up any part of their compensation.

21. Termination of Contract

- a) The Owner may, by written notice, terminate this Contract in whole or in part at any time, either for the Owner’s convenience or because of failure to fulfill the Contract obligations. Upon receipt of such notice, services shall be immediately discontinued (unless the notice directs otherwise) and all materials that may have been accumulated in performance of this Contract, whether completed, in transit, or in process, shall be delivered to the Owner. In such a case of termination, the contract price shall be made and remitted too include work

already completed and materials already ordered however to amount shall be allowed for anticipated profit on unperformed services.

- b) If the termination is due to failure to fulfill the Contractor's obligations, the Owner may take over the work and prosecute the same to completion by contract or otherwise. In such case, the Contractor shall be liable to the Owner for any additional cost occasioned to the Owner thereby.
- c) If, after notice of termination for failure to fulfill its Contract obligations, it is determined that the Contractor had not failed, the termination shall be deemed to have been effected for the convenience of the Owner. In such event, adjustment in the Contract price shall be made as provided in paragraph 21.a of this clause.
- d) 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.
- e) **Non-Appropriation:**
It is understood and agreed by the parties that in the event funds are not appropriated in the current fiscal year or any subsequent fiscal years, this contract will become null and void and the County will only be required to pay for services completed to the satisfaction of the County.

22. Waiver or Forbearance

Any delay or failure of County to insist upon strict performance of any obligation under this Agreement or to exercise any right or remedy provided under this Agreement shall not be a waiver of County's right to demand strict compliance, irrespective of the number or duration of any delay(s) or failure(s). No term or condition imposed on Contractor under this Agreement shall be waived and no breach by Contractor shall be excused unless that waiver or excuse of a breach has been put in writing and signed by both parties. No waiver in any instance of any right or remedy shall constitute waiver of any other right or remedy under this Agreement. No consent to or forbearance of any breach or substandard performance of any obligation under this Agreement shall constitute consent to modification or reduction of the other obligations or forbearance of any other breach.

23. Title VI Compliance:

Georgetown County hereby gives public notice that it is the policy of the agency to assure full compliance with Title VI of the Civil Rights Act of 1964, the Civil Rights Restoration Act of 1987, Executive Order 12898 on Environmental Justice, and related statutes and regulations in all programs and activities. Title VI requires that no person in the United States of America shall, on the grounds of race, color, or national origin, be excluded from the participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which Georgetown County receives federal financial assistance. Any person who believes they have been aggrieved by an unlawful discriminatory practice under Title VI has a right to file a formal complaint with Georgetown County. Any such complaint must be in writing and filed with Georgetown County's Title VI Coordinator within one hundred and eighty (180) days following the date of the alleged discriminatory occurrence. For more information, or to obtain a Title VI Discriminatory Complaint Form, please see our website at <http://www.gtcounty.org>.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK.]

IN WITNESS WHEREOF, the Owner and Contractor hereto have signed and sealed this Contract on the day and date first above written. To facilitate execution, this Agreement may be executed, including electronically, in as many counterparts as may be required. It shall not be necessary that the signature on behalf of both parties hereto appear on each counterpart hereof. All counterparts hereof shall collectively constitute a single agreement.

Georgetown County, South Carolina

Witness:

By: _____

John Thomas
Georgetown County Council Chair

[Company Name]

By: _____

(Title)

Attest:

SAMPLE

END OF SECTION 00500

SECTION 00600

PERFORMANCE BOND

BOND NO. _____

KNOW ALL MEN BY THESE PRESENTS that we, _____ as Principal, and _____ as Surety, are held and firmly bound unto Georgetown County, South Carolina hereinafter called the Obligee, in the Penal sum of _____ Dollars (\$ _____) for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally firmly by these presents.

WHEREAS, the Principal, on the _____ day of _____, 2019 entered into a certain Contract with the Owner, included herein, for the Contract entitled **Beck Recreation Center Multi-Purpose Fields & Facilities**.

NOW THEREFORE, the condition of this obligation is such that if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract, and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation shall be void; otherwise, to remain in full force and effect.

Whenever the Principal shall be and is declared by the Owner to be in default under the Contract, or wherever the contract has been terminated by default of the Contractor, the Owner having performed the Owner's obligations hereunder, the Surety shall:

1. Complete the Contract in accordance with its terms and conditions, or at the Owner's sole option.
2. Obtain a Bid or Bids for submission to the Owner for completing the Contract in accordance with its terms and conditions, and upon determination by the Owner and Surety of the lowest responsible Bidder, arrange for a Contract between such Bidder and the Owner, and made available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost completion less the balance of the Contract price but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term balance of the Contract price: as used in this paragraph, shall mean the total amount payable by the Owner to the Contractor under the Contract and any amendments thereto, less the amount properly paid by the Owner to the Contractor.

No right of action shall accrue on this Bond to or for the use of any person or corporation other than the Owner named herein or the successors or assignees thereof.

In the case of termination of the Contract, as provided in the Contract Documents, there shall be assessed against the Principal and Surety herein, all expenses, including design/engineering, geo-technical, surveying, and legal services incidental to collecting losses to the Owner under this Bond.

This Bond shall remain in full force and effect for such period or periods of time after the date of acceptance of the project by the Owner as are provided for in the Contract Documents, and the

Principal hereby guarantees to repair or replace for the said periods all work performed and materials and equipment furnished, which were not performed or furnished according to the terms of the Contract Documents. If no specific periods of warranty are stated in the Contract Documents for any particular item of work, material, or equipment, the Principal hereby guarantees the same for a minimum period of one (1) year from the date of final acceptance by the Owner.

The Surety shall permit arbitration and be ultimately responsible for the payment of any award.

IN WITNESS WHEREOF, the above bounden parties have caused this Bond to be signed and sealed by their appropriate officials as of the _____ day of _____, 2019.

PRINCIPAL

(Firm Name)

By: _____
(Title)

WITNESS

SURETY

(Firm Name)

By: _____
(Title)

WITNESS

END OF SECTION 00600

SECTION 00601

LABOR AND MATERIAL PAYMENT BOND

BOND NO. _____

KNOW ALL MEN BY THESE PRESENTS that we, _____ as Principal, and _____ as Surety, are held and firmly bound unto Georgetown County, South Carolina hereinafter called the Obligee, in the Penal sum of _____ Dollars (\$ _____) for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally firmly by these presents.

WHEREAS, the Principal, on the _____ day of _____, 2019 entered into a certain Contract with the Owner, included herein, for Contract entitled **Beck Recreation Center Multi-Purpose Fields & Facilities.**

NOW THEREFORE, the condition of this obligation is such that if the Principal shall promptly make payments to all persons supplying labor, materials and supplies used directly or indirectly by said Principal or his Subcontractors in the prosecution of the work provided for in said Contract, then this obligations shall be void; otherwise to remain in full force and effect, subject, however, to the following conditions:

1. This bond is executed for the purpose of complying with the applicable State of South Carolina Statutes and all acts amendatory thereof, and this Bond shall inure to the benefit of any and all persons supplying labor, material and supplies used directly or indirectly by the Principal or his Subcontractors in the prosecution of the work provided for in said Contract so as to give such persons a right of action to recover upon this Bond in a separate suit brought on this Bond. No right of action shall accrue hereunder to or for the use of any person except as such right of action may be given and limited by the applicable State of South Carolina Statutes.
2. In each and every suit brought against the Principal and Surety upon this Bond in which the plaintiff shall be successful, there shall be assessed therein against the Principal and Surety herein, in favor of the Plaintiff therein, reasonable counsel fees, which the Principal and Surety hereby expressly agree to pay as a part of the cost and expense of said suit.
3. A claimant, except a laborer, who is not in privity with the Principal and who has not received payment for his labor, materials, or supplies, shall, within forty-five (45) calendar days after beginning to furnish labor, materials, or supplies for the prosecution of the work, furnish the Principal with a notice that he intends to look to the bond for protection.
4. A claimant who is not in privity with the Principal and who has not received payment for his labor, materials or supplies shall, within ninety (90) calendar days after performance of the labor or after complete delivery of the materials or supplies, deliver to the Principal and to the Surety written notice of the performance of the labor or delivery of the materials or supplies and of the non-payment.
5. No action for the labor, materials, or supplies may be instituted against the Principal or the Surety unless both notices have been given. No action shall be instituted against the Principal or the Surety on

the bond after one (1) year from the performance of the labor or completion of delivery of the materials or supplies.

The Surety shall permit arbitration and be ultimately responsible for the payment of any award.

IN WITNESS WHEREOF, the above bounden parties have caused this Bond to be signed and sealed by their appropriate officials as of the _____ day of _____, 2019.

PRINCIPAL

(Firm Name)

By: _____
(Title)

(Witness)

SURETY

(Firm Name)

By: _____
(Title)

(Witness)

END SECTION 00601

SECTION 00750

SUMMARY SCHEDULE AND KEY MILESTONES

1.0 GENERAL

1.01 THIS SECTION INCLUDES

- A. Summary Submittals
- B. Key Milestones
- C. Base Bid Summary Schedule
- D. Alternate Summary Schedule (If Applicable)

1.02 SUMMARY SCHEDULE

- A. Summary Schedules referred to in this section will be developed by the Contractor and the Owner illustrating an approach to designing and constructing the project. The activities to be shown on the schedules will be monitored and updated.
- B. Milestones shown on the Summary Schedules will be “Key Milestones” and are to be included in the Contractor’s Contract Schedule. The Contractor is responsible to develop his/her own activities and logic to meet the required Key Milestone Intermediate Dates. Refer to Division 1, Section 01310, Project Management and Coordination.

1.03 KEY MILESTONES

- A. Key Milestones shall be included in all Contractor Schedules and show completing on the intermediate dates shown in this Section.
- B. Key Milestones are a contractual requirement and liquidated damages as specified in *The Project Manual, Vol. 1, Division 1, Section 01100, Summary of Work*, will be assessed for each Key Milestone that completes beyond the dates listed below. Refer to Division 1, Section 01100 and Summary of Work.
- C. Key Milestones for the Base Bid are as follows:

Milestone: ***Substantial Completion***
Milestone: ***Final Completion***

Date: 240 Days from NTP
Date: 270 Days from NTP

END OF SECTION 00750

SECTION 00800

SPECIAL PROJECT CONDITIONS

1.0 PURPOSE

The Special Project Conditions are intended to identify those elements of work and items of material, and responsibilities of the Contractor, which are unique to the **Beck Recreation Center Multi-Purpose Fields & Facilities** and required by the Contract Documents. They are intended to supplement those contractual requirements contained within the Contract Documents including, but not limited to: the Contract; Division 1, General Requirements, Drawings and Technical Specifications.

2.0 SAFETY AND SECURITY

2.0.1 ENTRY ONTO THE PROJECT SITE

The only entrance to the Project site shall be by a gate or gates or such other location designated by the Owner. This will be determined during the pre-construction meeting. The Contractor shall be responsible for gate security. Vehicles to be allowed on the Project site will include only those of the Contractor, prime and sub-contractors and those designated by the Owner. Contractor shall have sole responsibility for the control and safety of vehicles traversing to and from Church St.

2.0.2 STORAGE / STAGING AREA

All construction material, either the Contractor's, prime and sub-contractor's vehicles and equipment, and personal vehicle parking areas will be established and regulated by the Contractor and approved by the Owner.

2.0.3 OPEN TRENCHES

All open trenches and excavations within the project site shall be marked by lighted and flagged barricades.

2.0.4 SECURITY

The Contractor shall be responsible for the security of his/her equipment and materials, as well as the security of the equipment and materials of his agents prime and sub-contractors. Further, he/her shall be responsible for the security of all gates and entrances to the Project site. The gates shall be locked at all times, or guards posted at the gates to control ingress and egress through them. The Contractor shall provide adequate lighting for the entire area of the Project site.

The Contractor shall provide to Owner a list of all his/her employees as well as a list of all the employees of the prime and sub-contractors and shall, during the work of the Project, advise the Owner of changes to the list of personnel working on the Project. The Contractor shall be responsible for the direct supervision of his/her employees, those of his agents, prime and sub-contractors at all times while on the Project site.

The Contractor shall exercise and take all precautions in the storage and dispensing of all flammable liquids such as, but not limited to, gasoline, diesel fuel and lubricants.

3.0 SURFACE INFORMATION AND MATERIALS INSPECTION

The Contractor shall have full responsibility for acquisition, interpretation, analysis and cost impact of sub-surface conditions in the performance of the Work required by this contract. The Contractor shall provide, to the Owner, written certification that all materials and equipment meet the design requirements, established in the drawings and technical specifications for permitting and are in conformance with the Construction Documents. Copies of all test, inspection and certification reports shall be submitted to the Owner within twenty-four (24) hours of receipt of such reports by the Contractor.

4.0 PAVEMENT

The Contractor shall be responsible for all roadways adjacent to or on the project site over which his, his agents prime and / or sub-contractors vehicles may travel. The Contractor shall at his sole cost and expense, repair any damage caused by operation of equipment or hauling of debris on any and all roads off of the project site used to travel on.

5.0 PROJECT SIGN

The Contractor shall provide and erect one (1) Project sign as indicated in the drawings. See C9 Site Details for specifications. Location and information to be included on the sign will be determined by the Owner and provided at the pre-construction meeting. Refer to Division 1, Section 01580, Project Identification and Signs.

6.0 PROJECT PROGRESS PHOTOGRAPHS

The Contractor shall furnish to the Owner progress photographs that shall be taken monthly for the duration of the Work of this Contract. The photographs shall be taken before the start of construction work and continuing throughout the work as it progresses and as long as the work of this Contract is being performed. Refer to Division 1, Section 01322, Photographic Documentation. A photograph shall be taken from each corner of the construction limit lines of this Contract looking towards the center of the Project site.

PART 2- PRODUCTS

Not Used

PART 3- EXECUTION

Not Used

END OF SECTION 00800

SECTION 00900

**LIST OF DRAWINGS AND TECHNICAL SPECIFICATIONS
Bid# 19-032, Beck Recreation Center Multi-Purpose Fields & Facilities**

SHEET NUMBER	SHEET TITLE	ORIGINAL DATE	REVISION DATE
C0	Cover Sheet	4/12/2019	
C1	Project Notes	4/12/2019	
C2	Existing Conditions, Demo & Tree Protection Plan	4/12/2019	
C3	Erosion & Sediment Control Plan-Phase 1	4/12/2019	
C4	Erosion & Sediment Control Plan-Phase 2	4/12/2019	
C5	Erosion Control Details	4/12/2019	
C6	Erosion Control Details	4/12/2019	
C7	Erosion Control Details	4/12/2019	
C8	Site Layout Plan	4/12/2019	
C9	Site Details	4/12/2019	
C10	Site Details	4/12/2019	
C11	Grading & Drainage Plan	4/12/2019	
C12	Storm Profiles	4/12/2019	
C13	Grading & Drainage Details	4/12/2019	
C14	Utility Plan	4/12/2019	
C15	Utility Details	4/12/2019	
L1	Landscape Plan	4/12/2019	
L2	Landscape Details	4/12/2019	
IR-1	Irrigation Plan	4/12/2019	
IR-2	Irrigation Details	4/12/2019	
S1	Structural Plans	4/12/2019	
E0.0	Electrical Photometric Plan	4/12/2019	
E1.0	Electrical Site Plan	4/12/2019	
E2.1	Electrical Details	4/12/2019	
E2.2	Electrical Specs & Schedules	4/12/2019	

ADDITIONAL ATTACHMENTS:

DESCRIPTION
1) Pre-Fabricated Sample Drawings from CXT Precast Products
2) Geotechnical Report from Terracon Consultants, Inc.

END OF SECTION 00900

SECTION 01100

SUMMARY OF WORK

PART 1-GENERAL

The Summary of Work in this Section comprises the **Beck Recreation Center Multi-Purpose Fields & Facilities** Georgetown County, South Carolina. The following scope of work description is intended to be general in nature. The intention is to have the successful Contractor perform all of the work included and presented within the Contract Documents, paying particular attention to the Summary Schedule, Key Milestones in Division 0, Section 00750. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual. The Drawings and Technical Specifications are not intended to indicate or describe all work, or means and method of construction required for completion of the Work. The Contractor shall provide and install all incidentals that are required for completion of the Work.

BASE BID:

The scope of this work shall include removal and relocation of a playground, pavilion, and two benches. Construction of a running track, multi-use/football field, one basketball court and associated fencing. Site electrical and lighting for field and one basketball court. Site work to include any demolition and proposed grading, drainage, and stormwater. Installation of an irrigation system and landscaping. Contractor shall also provide and coordinate the installation of a CXT “brand name or equal” pre-fabricated restroom and concession building including water and sewer to the building. General Contractor shall coordinate with pre-fabricated building vendor for stamped permit and construction drawings in order to obtain building permit from City of Georgetown. Work shall also include the construction of a driveway, parking lot, and sidewalks adjacent to the new restroom and concessions. See engineered drawings provided by Stantec Consulting Services, Inc. for detailed drawings and specifications. A Geotechnical report provided by Terracon Consultants, Inc. is also available for download free of charge at the County’s website along with a CXT pre-fabricated building design that is being provided as a sample for informational purposes only and as the basis for design.

1.01 RELATED REQUIREMENTS INCLUDED

- A. Project Manual, Division 0, Bidding and Contract Documents
- B. Project Manual, Division 1, General Requirements
- C. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual, without exception.
- D. The Contract Form for this Project shall be as stipulated in Division 0, Section 00500 in the Project Manual.

1.02 SCOPE OF WORK AND USE OF THE PREMISES

- A. Contractor shall have use of the Project Site as shown on the applicable Drawings for execution of the Work of this Contract, except as may be otherwise indicated or necessitated by the requirements of the Project Manual, or as may be determined by the Owner.
- B. Contractor shall provide, or cause to be provided, and shall pay for all testing, labor, equipment, materials and such other utilities, transportation and facilities necessary for the proper execution of the Work, whether temporary or permanent, and whether or not incorporated or to be incorporated in the Work.
- C. Construction services shall be performed by qualified, licensed construction contractors and suppliers selected and paid by the Contractor.
- D. Contractor shall provide protection at all affected areas of the site during the performance of the Work.

- E. Contractor shall perform all work in conformance with O.S.H.A. requirements, which will be strictly enforced.
- F. Contractor shall coordinate the use of the premises consistent with the Project requirements as may be directed by the Owner.
- G. Contractor shall use access routes for delivery of materials and equipment only as indicated on the drawings approved by the Owner and as may be directed by the Owner. Do not use access routes other than those indicated. Contractor shall keep clean, maintain and repair all access routes used.
- H. Contractor shall assume full responsibility for the protection and safekeeping of all products under this contract, stored and / or installed on the Project Site as well as those products stored off the Project Site. Materials, products and equipment shall be stored on the Project Site only in those areas indicated or allowed for staging and approved by the Owner.
- I. Safe staging and material storage shall be limited to the area indicated on the drawings, which have been approved by the Owner and as may be designated by the Owner. Contractor must obtain specific permission from the Owner for the use of other areas for storage and staging.
- J. Contractor shall protect existing sidewalks, pavement, curbs, utilities, building exterior and interior surfaces subject to damage by Work performed under this contract. Contractor shall, at his sole cost and expense, repair or replace any existing work damaged by his/her prime and/or sub-contractor's personnel or equipment.

1.03 WORK SEQUENCE AND COMPLETION

- A. Contractor shall work in an orderly manner coordinated with the work of other disciplines and trades.
- B. No disruption to, or use of adjacent facilities and access to those facilities will be allowed.
- C. The Owner may require certain work to be performed after normal working hours or on holidays or weekends or as may be necessitated in the Public interest. Such work does not constitute a change of scope or additional cost.
- D. Contractor shall perform the Work in conformance with the Summary Schedule and Key Milestones in Section 00750. This Section includes critical interim completion dates that the Contractor is required to meet.

1.04 LIQUIDATED DAMAGES

The Contractor agrees to commence Work under this Contract on the effective date established as "Notice to Proceed", and to complete the Work in conformance with the established Summary Schedule and Key Milestones in Section 00750 of the Project Manual. Should the Contractor neglect, fail or refuse to complete the Work by any one of the key milestone activities by its critical interim completion date(s) or the Substantial Completion date then the Contractor shall pay to the Owner Liquidated Damages in the amount of **\$500.00** per calendar day for those damages suffered by the Owner as a result of delay for each and every calendar day that the Contractor has failed to complete any key milestone activity by its interim completion date or the Substantial Completion date. The aforementioned Liquidated Damages are not a penalty, but rather are a pre-agreed liquidation of the losses incurred by the Owner due to failure of the Contractor to complete the Work on time.

1.05 SUBSTITUTIONS AND PRODUCT OPTIONS

Refer to Division I, Section 01600, Product Requirements in the Project Manual.

1.06 SURVEY

Contractor shall verify any and all survey data and report any errors and inconsistencies in writing to the Owner before any work is performed in those areas where errors and inconsistencies may exist. Refer to Division 1, Section 01310, Project Management and Coordination in the Project Manual.

PART 2- PRODUCTS

Not Used

PART 3- EXECUTION

Not Used

END OF SECTION 01100

SECTION 01230

ALTERNATES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. This Section identifies each Alternate by number and describes the basic changes to be incorporated into the Work, only when that Alternate is made part of the Work by specific provisions in the Contract Agreement. Administrative and procedural requirements governing Alternates is included

1.02 RELATED REQUIREMENTS

- A. An Alternate is an amount proposed by Bidders and stated on the Bid Form for certain work defined in the Bidding and Contract Documents that may be added to or deducted from the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in products, materials, equipment, systems or installation methods described in the Contract Documents.
- B. The Contract shall incorporate Alternates accepted, in writing, by the Owner.
- C. Sections of the Technical Specifications as may be referred to and listed under the respective Alternates.
- D. Referenced Sections of the Technical Specifications stipulate pertinent requirements for products and methods to achieve the Work stipulated under each Alternate.
- E. Coordinate pertinent related work and modify surrounding work as required to properly integrate work under each Alternate, and to provide the complete construction work required by the Contract Documents.
- F. Each Alternate shall be quoted giving a date on which the Alternate must be accepted so as to have no affect on the Contract amount and schedule.
- G. Division 1, General Requirements, in the Project Manual governs the execution of all Technical Specification Sections.

1.03 ALTERNATES

- A. Alternates will be accepted and executed at the option of and after review by the Owner.
- B. This Section identifies each Alternate by number, and describes the basic changes to be incorporated into the Work but only when that Alternate is made a part of the Work by specified provisions in the Contract and approved by the Owner in writing. No other adjustments will be made to the Contract Sum.

1.04 DESCRIPTION OF ALTERNATES

Alternate #1–ADD-One basketball court, goals, and associated lighting

Alternate #2–ADD-Upgrade from Base Bid to Acrylic Track Surfacing System for Track

Alternate #3–ADD-Upgrade from Base Bid to EDPM Track Surfacing System for Track

Alternate #4–ADD-Football Goals – Provide and Install

Alternate #5–ADD-Field Event Facilities (Long/Triple Jump, Shot Put, Discus and Cage)

Alternate #6–ADD-Shade structure at plaza – Provide and Install

Alternate #7–DEDUCT-Substitute Common Bermuda grass sod for Tifway 419.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION 01230

SECTION 01290

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents of the Project Manual.
- B. Division 1, General Requirements of the Project Manual

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements governing the Contractor's Certified Applications for Payment.
- B. This Section requires the coordination of the Contractor's Applications for Payment with the Construction Schedule, including established Key-Milestone Dates, Schedule of Values, Submittal Schedule, Prime and Sub-Contractors work.

1.3 APPLICATION FOR PAYMENT

A. General

1. Progress payments shall be applied for and made as the construction of the Work proceeds at intervals stated in the Contract. The Contractor will provide, to the Owner a "draft" copy of his/her Application for Payment on the 25th day of the month, or the closest workday should the 25th day fall on a weekend or holiday. This provides an opportunity to discuss figures (Schedule of Values) before they become "fixed", and will expedite the processing of the final typed Application when the Owner receives it.
2. Formal Applications for Payment shall be submitted to the Owner by close of business on the 1st day of the succeeding month, or the closest work day should the 1st day fall on a weekend or holiday of the month. The Certified Application for Payment will be processed, by the Owner, thirty (30) calendar days from the day that the Contractor submits the final Application for Payment, except if that day should fall on a weekend or holiday in which case payment shall be made on the next succeeding work day.
3. All information required on the Application shall be provided and filled in, including that for Change Orders executed prior to the date of submittal of the Application. Summary of dollar values must agree with respective totals indicated on continuation sheets.
4. Each Certified Application for Payment shall be consistent with previous Applications as approved by and paid for by the Owner.
5. All Work covered by Progress Payments shall, at the time of payment, become the property of the Owner.
6. Form of Application for Payment will be AIA Document G 702 revised, and Continuation Sheets G 703.
7. All formal Applications for Payment shall be submitted in duplicate to the Owner by means ensuring receipt within twenty-four (24) hours. Itemized applications and supporting documents shall be submitted with a complete transmittal form listing attachments, and recording appropriate information related to the Application in a manner acceptable to the Owner. Itemized data and format provided on continuation sheets shall

include schedules, line items, values as stipulated in the Schedule of Values as accepted by the Owner.

8. With each Application for Payment the Contractor shall certify that such Application for Payment represents a just estimate of costs reimbursable to Contractor under terms of the Contract and shall certify there are no Mechanic's or Materialmen's Liens outstanding at the date of that Application for Payment, that all due and payable bills with respect to the Work have been paid to date or shall be paid from the proceeds of that Application for Payment, that there is no known basis for the filing of any Mechanic's or Materialmen's Lien against the Surety in connection with the Work, that Waivers and Bills Paid Affidavit forms from all prime and subcontractors, consultants and materialmen have been, or will be, obtained in the form agreeable to the Owner and that amount of the contract remaining to be expended is sufficient to complete the project.
9. The Contractor shall complete each entry on the forms, including notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. Incomplete Applications for Payment will be returned without action.
10. Conditions governing regular schedule for applications, payment and retainage shall be as stated in the Contract.
11. Continuation sheets shall include a total list of all scheduled component items of work with item number and scheduled dollar value for each item. Dollar values to be included in each column for each scheduled line item when Work has been performed or products stored. Round off values to nearest dollar or as may be specified for Schedule of Values.
12. List each Change Order executed prior to date of submission at end of continuation sheets. List by Change Order number and description as to original component item of Work.

B. Waivers and Mechanics Liens

1. Monthly Applications for Payment shall include Waivers of Mechanic's Liens and Claims for all Work included in the period of construction covered by the Application for Payment and the previous month's Application. Waivers of Liens and Claims from prime contractors or subcontractors and suppliers shall include the period of construction covered by the Application for Payment, the total amount paid prior to and including the previous month's Application
2. Partial Waivers of Liens shall be submitted on each item of work for the amount requested, prior to deduction for retainage, for each item.
3. Contractor shall submit final or full Waivers of Liens and Claims for completed items of work shown on the monthly Application for Payment.
4. The Owner reserves the right to designate which entities involved in the Work must submit Waivers of Liens.
5. The Contractor's final Application for Payment shall be submitted with, or preceded by final Waivers from every entity involved with the performance of work, supplying of materials or the providing of professional services covered by the Application who could lawfully be entitled to a Lien.

6. Waivers of Liens shall be provided on forms, and executed in a manner acceptable to the Owner.

C. Initial (First) Monthly Application for Payment

1. Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include, but are not limited to the following:
 - a. List of all prime contractors, first and second tier subcontractors.
 - b. Contractor's Sworn Statement of principal suppliers, fabricators, prime and subcontractors.
 - c. Schedule of Values.
 - d. Contractor's construction schedule, to be updated monthly.
 - e. Schedule of principal products and long lead delivery items, to be updated monthly.
 - f. Submittal Schedule, Procurement Schedule.
 - g. Copies of all required permits.
 - h. Copies of authorizations and licenses from governing authorities for performance of work.
 - i. Initial progress report.
 - j. Certificates of Insurance and insurance policies.
 - k. Any material stored off site must carry additional insurance (All Risk Rider) stating Owner as insured. All material will be inspected by the Owner before billing can be approved. Bill of Sale and receipts for items being billed at cost only are required and 25% retainage will be held for off-site stored materials. Paperwork must accompany request two weeks prior to billing to insure adequate time to schedule Owner's inspection.
 - l. Contractor's Construction Safety Plan (Initial Only).

D. Application for Payment at Substantial Completion

1. The Contractor shall, upon issuance of the Certificate of Substantial Completion, submit his/her Application for payment, which shall reflect any Certificates of Substantial Completion issued previously for Owner occupancy for designated portions of the Work.
2. Application shall include, but not be limited to and as may be determined by the Owner, the following:
 - a. Certificates of Occupancy and such other permits and approvals as may be required.
 - b. Warranties (Guarantees) and maintenance agreements as may be applicable.
 - c. Testing, adjusting and balance records.
 - d. Maintenance manuals, training and instructions.
 - e. Equipment start-up performance reports.
 - f. Changeover information related to Owner's occupancy, use, operation and maintenance.
 - g. Final cleaning of the entire project site.
 - h. Application for Reduction of Retainage, and Consent of Surety.
 - i. List of incomplete Work, recognized as exceptions to issuance of Certificate of Substantial Completion.

E. Final Application for Payment

1. Administrative actions and submittals that shall precede or coincide with this final Application for Payment shall include, but not be limited to and as may be determined by the Owner, the following:
 - a. Completion of Project Closeout requirements.
 - b. Completion of items specified for completion after Substantial Completion.
 - c. Prepare and submit to the Owner a list of unsettled claims, as may be applicable.
 - d. Transmit to the Owner all required project records including permit drawings, as constructed drawings both on hard copy and in electronic (PDF) format.
 - e. Provide to the Owner evidence that all requisite taxes, fees and similar obligations have been paid in full.
 - f. Removal of all temporary facilities and services.
 - g. Removal of all surplus materials, rubbish and similar elements.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION 01290

SECTION 01300

REGULATORY REQUIREMENTS

PART 1 – GENERAL

1.01 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents of the Project Manual
- B. Division 1, General Requirements of the Project Manual

1.02 CODES, AUTHORITIES, REGULATORY AGENCIES, AND INDUSTRY REFERENCES

- A. Where references are made on the Drawings or in the Technical Specifications to codes, they shall be considered an integral part of the Contract Documents as minimum standards. Nothing contained in the Contract Documents shall be so construed as to be in conflict with any law, bylaw or regulation of the municipal, state, federal or other authorities having jurisdiction.
- B. Perform Work in compliance with the following code:
 - 1. Current edition of all applicable building code(s), local, state and federal.
- C. Perform Work in compliance with the following Authorities and Regulatory Agencies:
 - 1. Georgetown County, South Carolina
 - 2. City of Georgetown, South Carolina
 - 3. South Carolina Dept. of Natural Resources (SCDNR)
 - 4. South Carolina Dept. of Transportation (SCDOT)
 - 5. South Carolina Department of Health Environmental Controls (SCDHEC)
 - 6. OSHA Code of Federal Regulations. (OSHA)
 - 7. All federal, state and local clean air, clean water, water rights, resource recovery, and solid waste disposal standards and the Federal Endangered Species Act, and the Occupational Safety and Health Acts.
 - 8. Environmental Protection Agency (EPA).
- D. Perform Work in compliance with the following industry references:
 - 1. American Sports Builders Association (ASBA)
 - 2. The National Electrical Manufacturer's Association Standards (NEMA)
 - 3. National Electric Code (NEC)
 - 4. The Manufacturer's Recommendation
 - 5. National Fire Protection Association (NFPA)
 - 6. NFPA 101, Life Safety Code.
 - 7. SCE 7-88: Minimum Design Loads for Buildings and Other Structures.
 - 8. American Society for Testing and Materials (ASTM).
 - 9. Underwriters Laboratories (UL).
 - 10. The National Board of Fire Underwriters.

1.03 FIRE RATINGS

- A. Where material, component, or assembly is required to be fire rated, fire rating shall be determined or listed by the following testing agency:

1. Factory Mutual Laboratories (FM).

B. Equivalent fire rating as determined or listed by another testing authority is acceptable if approved by applicable governing authorities, Georgetown City Fire Department and Georgetown County.

1.04 PERMITTING

A. At no additional expense to the Owner, file for and obtain necessary licenses and permits for any interim phases for construction, and be responsible for complying with any Federal, State, County, and Municipal Laws, Codes, regulations applicable to the performance of the Work, including, but not limited to, any laws or regulations requiring the use of licensed prime and /or subcontractors to perform parts of the Work.

1.05 INSPECTION AND CERTIFICATIONS

A. Arrange inspection and obtain Certificates of approval from applicable authorities having jurisdiction. Furnish Certificates of Approval in accordance with the applicable Technical Specifications and the General Requirements of the Contract.

B. Notify and coordinate for all appropriate City of Georgetown, Georgetown County, and State inspections of the work. Allow enough time to maintain progress of the work.

1.06 PERFORMANCE

A. Should the Contractor knowingly perform any Work that does not conform with the requirements of applicable codes, ordinances, regulations, or standards, without given prior written notice to the Owner and obtaining required variance, etc. from the governing body, Contractor shall assume full responsibility thereof and shall bear all costs involved in correcting such non-complying Work. Costs shall include but not be limited to: All fines, inspection costs, damages, design and management fees in addition to the cost of removal and replacement of the work of all trades involved.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION 01300

SECTION 01310

PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual and the Construction Contract Documents, without exception
- B. The Contractor shall be responsible for general project coordination of all construction phases and aspects, trades and disciplines of the Work of the Project.
- C. The Contractor shall be responsible for general coordination of all construction site operations with other improvement projects that may be conducted by the Owner.
- D. The Contractor shall be responsible for general coordination with other interested parties including, but not limited to, the City of Georgetown, Owner, other Contractors working on Owner or abutter property projects, and all involved permitting authorities.

1.02 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents in the Project Manual.
- B. Division 1, General Requirements in the Project Manual

1.03 GENERAL COORDINATION

- A. Coordinate scheduling, submittals, and work of various Sections of the Technical Specifications to assure efficient and orderly sequence of installation of construction elements with provisions for accommodating items furnished by the Owner, or others, to be installed by the Contractor.
- B. Coordinate sequence of Work to accommodate partial occupancy for the Owner as specified in Section 01100, Summary of Work and / or as directed by the Owner.
- C. Review and coordinate requirements of all Divisions of the Project Manual and Sections of the Technical Specifications. Report any discrepancies to the Owner.
- D. Maintain services of prime and major sub-contractors throughout duration of the Contract, except as may be required by provisions of Conditions of Contract. Notify the Owner, in writing, of intention to replace prime or sub-contractor(s), outlining reasons for the action and naming proposed replacement contractor(s).
- E. Coordinate work of prime and sub-contractors and record contractor installation(s) data on Project Record Drawings.
- F. All communications regarding Contract requirements shall be addressed to the Owner. Outline any special procedures required for coordination and include such items as required notices, reports, and attendance at meetings.
- G. Arbitrate and resolve coordination conflicts between prime and sub-contractors to ensure complete and operational systems.

- H. Coordinate work with all existing utility systems.
- I. Coordinate construction activities to ensure that operations are carried out with due consideration given to energy, water and materials.
- J. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

1.04 COORDINATION MEETINGS

- A. In addition to the meetings referred to in Section 01315, Progress Meetings, the Contractor shall conduct coordination meetings and pre-installation meetings with supervisory personnel, prime and sub-contractors, suppliers, the Owner and others as necessary and applicable to assure coordination of different trades and disciplines
- B. Schedule coordination and pre-installation meetings with prime and sub-contractors, suppliers and the Owner to discuss hardware installation and specialty systems installation as may be applicable.

1.05 COORDINATION OF SUBMITTALS

- A. Coordinate use of Project space and sequence of installation of equipment, walks, parking areas, mechanical, electrical, plumbing, or other Work that is indicated diagrammatically on the Drawings and/or contained in the Technical Specifications. Utilize space efficiently to maximize accessibility for Owner installations, maintenance and repairs.
- B. In finished areas, except as otherwise shown, conceal ducts, pipes, wiring, and other non-finish items within construction. Coordinate locations of concealed items with finish elements, and provide as-constructed drawings of the involved location.
- C. Where installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in sequence required to obtain best results.
- D. Make adequate provisions to accommodate items scheduled for later installation, including accepted Bid Alternates, Owner supplied items, sub-subcontractor installed items, work by others, and installation of products purchased with allowances.

1.06 COORDINATION OF MECHANICAL, ELECTRICAL, AND OTHER INSTALLATIONS

- A. General: Sequence, coordinate, and integrate the various elements of mechanical, electrical, and other systems, materials, and equipment. Comply with the following requirements:
 - 1. Coordinate mechanical and electrical systems, equipment and materials installation with other building components.
 - 2. Verify all dimensions by field measurements, and advise the Owner of any dimensional conflicts.

3. Arrange and coordinate for chases, slots, and openings in other building components during progress of construction.
4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, prior to placement of concrete and/or other structural components.
5. Where mounting heights are not detailed or dimensioned, install systems, materials, and equipment to provide the maximum headroom possible and advise the Owner prior to completion of such installations.
6. Coordinate connection of systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchise service (utility) companies, and controlling agencies. Coordinate and provide required connection for each service.
7. Install systems, materials, and equipment to confirm with approved submittal data, include coordination drawings. Confirm to arrangements indicated by the Contract Documents, recognizing that portions of the Work may be shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, immediately refer conflict to the Owner
8. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components. Elements restricting such installation will be referred to the Owner
9. Install systems, materials, and equipment to facilitate servicing, maintenance, and repair or replacement of disconnecting, with minimum of interference with other locations and ease of access.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION 01310

SECTION 01315

PROGRESS MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Division 0, Bidding and Contract Documents apply to this Section.
- B. Division 1, General Requirements of the Contract Documents apply to this Section.

1.2 SUMMARY

This Section specifies administrative and procedural requirements for all project meetings including but not limited to the following:

- 1. Field / Site Coordination Meetings.
- 2. Construction Progress Meetings.
- 3. Project Coordination / Information Response Meetings (By Owner)

1.3 PROGRESS MEETINGS

- A. Conduct Field / Site Work Coordination meetings at a location and at appropriate times to be determined by the Owner. Notify the Owner no less than 48 hours prior to scheduled meeting date.

Conduct Construction Progress meetings at the Project site, or at such location designated by the Owner at regularly scheduled intervals. At the onset of the project these meeting shall be held on a weekly basis until such time as the frequency is changed by the Owner. Notify the Owner of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

Conduct Project Coordination / Information Response Meetings at such times as may be required and at a location to be approved by the Owner. Notify the Owner no less than 48 hours prior to scheduled meeting date.

- B. Agenda: Agendas and minutes for Field and Project Coordination meetings will be prepared by whoever (Contractor or Owner) requests the meeting. Agenda for regularly scheduled Construction Progress Meetings will be prepared by the Owner; minutes of those meetings will be prepared by the Contractor. Review and provide comment on minutes of the previous (Field/Site Coordination, Progress or Project Coordination meetings. Review other items of significance that could affect progress. Include topics for discussion as appropriate in the current status of the Project.
 - 1. Contractor's construction schedule: Review progress since the last meeting. Determine where each activity is in relation to the construction progress schedule, whether on time or ahead or behind schedule. Determine how schedule can be improved if behind.

- C. Reporting: After each Construction Progress meeting date the Contractor will prepare and forward to the Owner, minutes of the meeting for review and comment. The Owner will distribute (corrected) copies of minutes of the meeting to each party present and to other parties who should have been present. Contractor shall include a brief summary, in narrative form, of progress since the previous meeting and report.
1. Schedule Updating: Contractor will revise / update the construction schedule after each Construction Progress Meeting where revisions to the schedule have been made or recognized. Contractor will Issue the revised schedule, to the Owner, concurrently with the report / minutes of each meeting.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION 01315

SECTION 01320

CONSTRUCTION PROGRESS AND DOCUMENTATION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Schedule for Submittals
- B. Scheduling Personnel (NIC)
- C. Contract Milestones
- D. Submittal Schedule
- E. Material Procurement Schedule
- F. Construction Activities Schedule
- G. Construction Activities Schedule Revisions and Updates
- H. Short Interval Schedule
- I. Adjustments of Time for Completion

1.02 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents in the Project Manual, more specifically Section 00750, Summary Schedule and Key Milestones apply to this Section.
- B. Division 1, General Requirements in the Project Manual, more specifically Section 01100, Summary of Work, Section 01330, Submittal Procedures and Section 01770, Close Out Procedures apply to this Section.

1.03 SCHEDULE FOR SUBMITTALS

- A. Allow ten (10) calendar days for review and turnaround of any submittals as may be required in the Drawings and / or Technical Specifications. All required Submittals shall be forwarded directly to the Architect / Engineer of record with sufficient time to allow for review, approval, fabrication and delivery to support the Schedule as outlined. Copy of the transmittal only must be sent to the Owner.
- B. The Contractor shall submit the following as may be appropriate and acceptable to the Owner:
 - 1. Schedule of Submittals and Product Data: To be submitted within ten (10) calendar days from Notice to Proceed (NTP). Schedule shall show submittals commencing within ten (10) calendar days from NTP and completing within sixty (60) calendar days from NTP.
 - 2. Material Procurement Schedule: To be submitted within ten (10) calendar days from NTP.
 - 3. Construction Activities Schedule: To be submitted within ten (10) calendar days from NTP.
 - 4. Short Interval Schedule: To be submitted within seven (7) calendar days from NTP.
 - 5. Inspection and Material Testing Schedule: To be submitted within twenty-one (21) calendar days from NTP.

1.04 SCHEDULING PERSONNEL

- A. Not Included (NIC)

1.05 CONTRACT MILESTONES

- A. Key Milestones developed by the Owner and provided for in Division 0, Section 00750, Summary Schedule and Key Milestones in the Project Manual, are to be incorporated into the Contractor's Construction Schedule.
- B. Key Milestones: Key Contract Milestones (the "Milestones") are significant interim dates on the Critical Path of the Work and within the Contract Time at which certain portions of the Work must be either partially or totally complete in order for the Work to be in compliance with the Contract Documents
- C. Identify all Milestones in the Schedule Submittals, whether or not the Owner has identified those dates in the Bidding and Contract Documents.
- D. Milestones will be clearly identified in all Contractor submitted schedules and will serve as an essential instrument of measurement, by the Owner, of the Contractor's compliance with the Contract Documents.
- E. Failure by the Contractor to achieve Milestones by the Contract Dates may result in Owner implementing contractual remedies, as required, in order to regain the Contract Schedule.

1.06 SUBMITTAL SCHEDULE

- A. Within ten (10) calendar days after NTP, develop and submit a Schedule of Submittals on a form acceptable to the Owner. At a minimum, the Submittal Schedule shall be in the form of: (i) a hard copy; and, (ii) an electronic version (PDF) to be approved by the Owner.
- B. Incorporate all submittals required by the Contract Documents for the duration of the Contract Time.
- C. Integrate the Submittal Schedule into the Contract Schedule and link material and equipment deliveries as appropriate to construction work activities.
- D. Submit status of the Submittal Schedule with the monthly Contract Schedule Status Submission.
- E. Indicate changes from the previous report with an asterisk.
- F. The Owner's review of the Submittal Schedule does not constitute it to be a complete listing of all submittals required by the Contract.

1.07 MATERIAL PROCUREMENT SCHEDULE

- A. Within ten (10) calendar days after the NTP, develop and submit a Material Procurement Schedule on a form acceptable to the Owner. At a minimum, the Submittal Schedule shall be in the form of (i) a hard copy and (ii) an electronic version (PDF) to be approved by the Owner.
- B. Incorporate all material required by the Contract Documents for the duration of the Contract Time.
- C. Integrate the Material Procurement Schedule with the Schedule of Submittals and the Contract Schedule.
- D. Review the Material Procurement Schedule at the weekly scheduled Construction Progress Meeting.
- E. Submit status of the Material Procurement Schedule with the monthly Contract Schedule Status Submission.
- F. Indicate changes from the previous report with an asterisk.

1.08 CONSTRUCTION ACTIVITIES SCHEDULE

- A. Within ten (10) calendar days following NTP and prior to submission of the first Application for Payment, submit the Construction Activities Schedule (Project Schedule) both in (i) a hard copy and (ii) electronic version (PDF). The Project Schedule shall employ the Critical Path Method (CPM) and may utilize Microsoft Project or equal.
- B. Incorporate all Key Milestones as designated by the Owner in the Contract Documents, Division 0, Section 00750, as well as other Milestones the Contractor identifies as significant points in time.
- C. At a minimum, the Construction Activities Schedule (Project Schedule) shall include the following:
 - 1. A computer-generated bar chart, based upon the CPM logic, organized by discipline and resource and sorted by early start, early finish.
 - 2. No work activity shall exceed fifteen (15) working days in duration, unless agreed upon by the Owner.
 - 3. Each activity shall be cost loaded to reflect the estimated value of performing the work. Activity cost shall consist of the sum of labor, materials, equipment, supervision and allocated overhead. The sum of all activity cost shall equal the Contract Sum.
 - 4. All Milestones, submittal dates and completion dates for all shop drawing activities, material procurement, fabrication and delivery dates shall be in support of the Construction Activities Schedule. Anticipated types and durations of usage for major equipment, and any other scheduling data relevant to the Work shall be included.
 - 5. Activities required for Project Closeout shall include appropriate activities for obtaining Substantial Completion, Punch List, Punch Work, Final Inspections (including pre-inspections and system checkouts), Closeout Submittals (Certificates, Warranties, Manuals, Release of Liens, As-Constructed drawings etc.). Show Milestones for Substantial Completion, Temporary Certificate of Occupancy (where appropriate), Certificate of Occupancy, and Final Completion.
 - 6. Weather conditions, such as high or low ambient temperatures, wind, and/or precipitation, can influence progress of the work shall be considered and allowed for in the planning and scheduling of work. This is to ensure completion of the work within the Contract time. Weather conditions shall be determined by an assessment of average historical climatic conditions based upon the preceding ten (10) year records published for the locality by the U.S. Weather Bureau Service. Weather must be unusually severe and beyond the 10 year average to even be considered as having impacted the Project Schedule.
 - 7. The Project Schedule shall indicate holidays and any non-work days applicable to the schedule.
- D. Joint Review, Revision, and Acceptance of the Construction Activities Schedule:
 - 1. Within five (5) calendar days of receipt of Contractor's proposed Construction Activities Schedule (Project Schedule), the Owner and the Contractor shall meet for joint review of the Project Schedule to address corrections or adjustments needed. Any areas that conflict with timely completion of the Work of the Project shall be subject to revision by the Contractor at no cost to the Owner.
 - 2. Within five (5) calendar days after joint review, the Contractor shall revise and resubmit the Project Schedule in accordance with agreements reached during review. Within five (5) calendar days of resubmission of the revised proposed Project Schedule, the Owner and Contractor shall again meet for joint review.

3. Any areas of the schedule still not in compliance shall be corrected and the Project Schedule resubmitted for acceptance within three (3) calendar days of the joint review.
 4. If the Contractor fails to define any element of work, activity or logic, and the Owner's review does not detect this error or omission, such error or omission when discovered shall be corrected at the next monthly update without change to Contract Time, and at no cost to the Owner.
 5. If the Owner questions Contractor's proposed logic, activity duration or cost, Contractor shall provide satisfactory revisions or adequate justification, within five (5) calendar days of receipt of written request. Any changes to the Project Schedule shall be at the Contractor's sole cost and expense.
- E. The Project Schedule shall become the basis for tracking and measuring progress once the Owner has provided written acceptance of the Contractor's submittal. Acceptance of the Project Schedule by the Owner does not relieve Contractor of any responsibilities for the accuracy or feasibility of the schedule, or the Contractor's ability to meet Substantial Completion, Contract Completion and/or Key Milestones – Intermediate dates. Also, acceptance does not warrant, acknowledge or admit the reasonableness of logic, activity duration or cost loading of the Project Schedule.

1.09 CONSTRUCTION ACTIVITIES SCHEDULE REVISIONS AND UPDATES

- A. The Construction Activities Schedule (Project Schedule) shall be updated monthly to show progress and submitted for the Owner's review. The Contractor shall provide the updated Project Schedule with each payment application. This shall include two (2) schedule hard copies and reports along with one electronic version using Microsoft Project or equal software. Non-submittal of the update will be grounds to withhold the Application for Payment.
- B. Updating of the Project Schedule to reflect actual progress shall not be considered revisions to the Schedule. The accepted Project Schedule cannot be changed (revised) without review and acceptance, by the Owner of the Contractor's proposed change.
- C. After the monthly Schedule Update, if the Project Schedule no longer represents actual progress of the Work, Contractor shall revise the Project Schedule to properly reflect progress and resubmit to the Owner. Any costs determined as a product of the Schedule Update shall be borne solely by the Contractor
- D. If Contractor desires to make changes in the Project Schedule to reflect revisions in method(s) of operating and scheduling of Work, Contractor shall notify the Owner in writing, stating the reason for the proposed revision. After the Owner accepts the proposed revision, the Contractor shall implement the revision within three (3) calendar days and submit the Project Schedule to the Owner for review and final approval. Any costs determined as a product of the Project Schedule changes shall be borne solely by the Contractor
- E. In addition, revisions to the Project Schedule that are requested by the Owner shall be made by the Contractor within three (3) calendar days of the requested revision.
- F. All revisions to the Project Schedule shall be identified by an appropriate activity code. The Contractor shall submit the proposed code structure to the Owner for approval. Approval of the codes and requested revision(s) are required prior to revising the accepted Project Schedule.
- G. If the Contractor defaults by failing to submit a Project Schedule, or provide the required updates or revisions, the Owner reserves the right to prepare the Project Schedule, update, or revision back charging the Contractor for the cost of this work. In such an event:

1. The Owner will request the Contractor's participation in the development of the Project Schedule, update or revision to assure the Project Schedule produced accurately reflects Contract requirements and progress of the Work. The Contractor shall respond and participate in this effort within three (3) calendar days of the Owners request.
2. If the Contractor refuses to participate or cooperate with the Owner, then the Owner will develop the status of the Project Schedule to the best of its ability with the information available.
3. Whether the Contractor participates or not, the Project Schedule shall be issued for the use of a unilateral Change Order to the Contract as may be appropriate and determined by the Owner.

1.10 SHORT INTERVAL SCHEDULE

- A. Within seven (7) calendar days from receipt of Notice to Proceed (NTP) the Contractor shall submit to the Owner a Short Interval Schedule.
- B. The Short Interval Schedule shall be a time-scaled, hand-drawn or computer generated schedule and be consistent with the timing and sequencing of the Construction Activities Schedule (Project Schedule). It is not required to be in a CPM format.
- C. The Short Interval Schedule shall depict all activities planned to occur within the next four (4) weeks from the data date and show status for activities, which have occurred within the prior one (1) week from the data date.
 1. Generally, no activity presented in the Short Interval Schedule shall have a duration greater than five (5) working days.
 2. The Owner, from time to time, may require the Contractor to further define activities on the Short Interval Schedule that have a duration greater than one (1) day.
- D. The Contractor shall update the Short Interval Schedule at a minimum of once a week for the duration of the project. It shall be submitted to the Owner at regularly scheduled Progress and Coordination meetings. The data date shall be within one (1) workday of the aforesaid meeting.
- E. The Short Interval Schedule shall be utilized with Contractor's prime and sub-contractors and other project parties for the near term coordination of the Work.
- F. All Milestones identified in the Contract and scheduled to take place within the calendar time frame of the Short Interval Schedule shall be included in the Schedule.

1.11 ADJUSTMENT OF TIME FOR COMPLETION

- A. Time for Completion will be adjusted only in accordance with this Clause and the Contract Documents.
- B. Any request for adjustment of time for completion because of changes or alleged delays shall be accompanied by a complete and comprehensive **Time Impact Analysis Proposal**, which shall be submitted for approval within five (5) calendar days of the event causing delay. Failure to provide the proper notice within this time frame shall be construed as the Contractor's acceptance that the event causing delay can be absorbed into the Construction Activities Schedule (Project Schedule) without causing a delay to the project completion or any Key Contract milestone date.
- C. Each **Time Impact Analysis Proposal** shall provide information justifying the request and stating the extent of the adjustment requested. Each Analysis shall be in a form and content acceptable to the Owner and shall include, but not be limited to, the general information set forth in this section appropriate to the type of request (change or alleged delay) including the following:

1. A fragnet (a detailed sub-level schedule) CPM Schedule illustrating how Contractor proposes to have the change or alleged delay incorporated into the current Updated Project Schedule.
2. Identification of activities in current updated Project Schedule, which are proposed to be amended due to the change or alleged delay, together with engineering estimates and other appropriate data justifying the proposal.
3. **Time Impact Analysis Proposals** shall be based upon the dates when the change or changes were issued, or dates when alleged delay or delays began, status of work at that time, and shall include time computations for affected activities.
4. Activity delays shall not automatically mean that an extension of the Contract Time is warranted or due to the Contractor. *It is the Owner's intention to own and control all float time indicated in the Project CPM Schedule.*
5. Contract Time Extensions or Key Contract Milestone Adjustments will only be considered when a Critical Path activity or activities are affected and a resulting delay extends the Contract Completion Date or Key Contract Milestone date(s).
6. Adjustment of a Key Contract Milestone date(s) may not necessarily result in an adjustment to the Contract Completion Date.
7. As an alternative to extending the Contract Completion Date or adjusting Key Contract Milestones, the Owner may require the Contractor to adjust the Project Schedule. This shall be accomplished by revising logic, adding resources, working crews on overtime, working additional shifts, and any other mitigating measures that the Owner determines is in the best interest of the project and the Public. Contractor agrees to fully cooperate with the Owner in finding the most effective (least cost) means to accomplish this task when requested.
8. Should the Owner find, after review of the **Time Impact Analysis**, that the Contractor is entitled to an extension of time for completion, the time extension for completion will be considered for approval by the Owner.
9. **Time Impact Analysis** related to Change Order Work and/or Contract Time Extensions shall be incorporated into and attached to the applicable Change Order to be prepared by the Owner.

1.12 RAIN DELAYS

Rain Day: For rain delays, the Contractor shall be entitled to a one day extension of time for each day in any given month that the actual rain days measured at Georgetown South Carolina (NOAA Station 383470), or an otherwise mutually agreed upon location, exceed the NOAA average monthly rainfall for the month (rounded to the day). In order to qualify as a rain day, there must be at least one-hundredth of an inch precipitation on the date in question. The average number of days (rounded to the full day) in each month receiving one-hundredth of an inch or more of rain in Georgetown, South Carolina, according to NOAA are as follows:

Month	Days
January	10
February	8
March	9
April	7
May	8
June	10

Month	Days
July	11
August	12
September	10
October	6
November	8
December	9

The rain gauge (NOAA 383470), or an otherwise mutually agreed upon location, shall be used as the determinate for daily rain measurement. The Contractor shall submit any request for rain days by the tenth day of the following month. Rain and weather delay extensions of time are non-compensable delays and the Contractor shall be entitled to no additional compensation as consequence of rain and weather related extensions hereunder.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION 01320

SECTION 01322

PHOTOGRAPHIC DOCUMENTATION

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual, without exception.
- B. Construction progress record photographs shall be taken by the Contractor periodically during the course of the Work as requested by the Owner.
- C. Furnish construction photographs taken at commencement of Work and at monthly intervals until completion of the Work.
- D. Views and quantities required:
 - 1. At each specified time, take photographs from numerous different views to show the progress of the Work. Indicate date photo was taken on all photographs.
 - 2. Furnish one (1) digital copy in a mutually acceptable format to the Owner.
 - 3. The Owner shall have the right to request fewer photographs be taken at certain intervals so more photographs may be taken at other times, providing the total number of photographs remains unchanged.
- E. Do not display photographs in publications, contests or other public or private forums without the express written consent of Owner.
- F. Assemble construction photographs at project closeout in accordance with requirements stipulated in Section 01781, Project Record Documents.

1.02 RELATED REQUIREMENTS

- A. Division 1, General Requirements of the Project Manual.
- B. Section 01781, Project Record Documents.

1.03 COST OF PHOTOGRAPHY

- A. Contractor shall pay all costs for specified photography and prints.

PART 2 –EXECUTION

2.01 VIEWS REQUIRED

- A. Consult with the Owner for instructions concerning views required at each specified visit to Site.

- B. Photographs from locations to adequately illustrate conditions of construction and progress status.

2.02 DELIVERY

- A. Deliver digital photos to the Owner as soon as available.

END OF SECTION 01322

SECTION 01330

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Submit shop drawings, product data, samples, coordination drawings and certifications concurrently as required in the applicable Drawings and / or Technical Specifications.
- B. Prepare and submit to the Owner no later than ten (10) calendar days after receipt of Notice to Proceed (NTP), a list of submittals required by each applicable Section of the Technical Specifications. Submit in accordance with this Section and the requirements of Section 01310, Project Management and Coordination.
- C. Designate in schedule data dates for submission and review of shop drawings, product data and samples and the date of return.

1.02 RELATED REQUIREMENTS

- A. Division 1, General Requirements of the Project Manual.

1.03 SHOP DRAWINGS

- A. Present drawings in a clear and thorough manner. Prepare original, project specific documents- do not reproduce Construction Documents.
- B. Identify details by reference to sheet and detail, schedule or room numbers shown on Contract Drawings or as may be referred to in the Technical Specifications.
- C. Consecutively number shop drawings for each section of Work. Retain numbering system throughout all revisions.
- D. Show detail, material, dimensions, thickness, methods of assembly, attachments and relationship to adjoining Work and other pertinent data and details.
- E. Verify dimensions and field conditions. Clearly indicate field dimensions and field conditions.
- F. Check and coordinate shop drawings of any Section or trade with requirements of other Sections or trades as related and as required for proper and complete installation of Work.
- G. Prepare composite shop drawings and installation layouts when necessary or requested to depict proposed solutions for tight field conditions. Coordinate in field with affected trades for proper relationship to work of other trades based on field conditions.

1.04 PRODUCT DATA

- A. Preparation

1. Annotate each sheet to clearly identify specific product or part installed, and specific data applicable to installation.
2. Show performance characteristics and capacities.
3. Show dimensions and clearances required.
4. Show wiring or piping diagrams and controls.
5. Indicate specified finish.
6. Indicate only those sheets, which are pertinent to specific product(s) with product clearly identified.

B. Manufacturer's standard schematic drawings and documents.

1. Modify drawings and diagrams to delete information which is not applicable to the Work.
2. Supplement standard information to provide information which is applicable to the Work.

1.05 SAMPLES

- A. Provide a minimum of two (2) samples, or as otherwise indicated in the Technical Specifications, of sufficient size to clearly illustrate:
1. Functional characteristics of the product, with integrally related parts and attachment devices.
 2. Full range of color, texture, and pattern.
 3. Samples shall be referenced to the applicable section of the Technical Specifications.

1.06 MANUFACTURER'S CERTIFICATION OF MATERIALS AND EQUIPMENT

- A. Before shop drawings or manufacturer's data for equipment are submitted for approval, a duly authorized manufacturer's representative of the proposed equipment shall review the design of the system relative to the proper operation of his/her equipment and material.
1. Shop drawings and/or manufacturer's data submitted shall include letter from manufacturer's representative certifying that his/her equipment and materials will operate and function satisfactorily under the proposed design conditions. If required by the jurisdiction having authority, data shall be signed and sealed by a South Carolina Registered Engineer in the respective discipline.
- B. Before the work is accepted, a duly authorized manufacturer's representative of the installed equipment shall inspect the installation and operation of his/her equipment and materials to determine that they are properly installed and properly operating in accordance with the manufacturer's recommendations.
- C. Systems requiring certification will be specified in each of the applicable Sections of the Technical Specifications.

1.07 CONTRACTOR REVIEW

- A. Contractor shall review all submittals prior to transmittal to the Architect / Engineer of record and the Owner.
1. The Contractor shall consecutively number all shop drawings and product data transmittals. Re-submittals would have the same number of the previous submittal followed by the suffix "A, B, C etc."

2. The transmittal is to contain the Owner's RFP / Bid number and the applicable specification section for each product represented on the transmittal.
-
- B Apply Contractor's stamp to submittals, initialed or signed by authorized person and dated, certifying: review of submittal, verification of products, field measurements, and field construction criteria, and coordination of information within submittal with requirements of Work and the Construction Contract Documents.
 - C Submittals without Contractor's stamp or submittals which, in the Owner's and the Architect / Engineer of record opinion are incomplete, contain numerous errors, or have not been checked or have only been checked superficially, will be returned without comments. Delays resulting therefrom shall be solely the Contractor's responsibility.
 - D. Clearly note proposed deviations from the Contract Documents on submittals. Submit listing identifying deviations in a format acceptable to the Architect / Engineer of record and the Owner.
 - E. Contractor shall be responsible to ensure quantities and dimensions shown on submittals comply with the requirements of the applicable Drawing and Technical Specifications.

1.08 SUBMISSION REQUIREMENTS

- A. Make submittals promptly to the Architect / Engineer of record and the Owner in accordance with approved Submittal and Project Progress Schedule and in such sequence as to cause no delay in the Work.
- B. Number of submittals required:
 1. Shop Drawings: Submit two (2) full size, hard copies and one (1) electronic version (PDF) in addition to what the Contractor will require back; submit one (1) additional electronic version (PDF) each for civil, structural, mechanical, electrical, or landscaping work.
 2. Product Data: Submit two (2) originals that will be retained by the Architect / Engineer of record and the Owner.
 3. Samples: Submit the number stated in each of the respective Technical Specifications, with a minimum of two (2) samples, or as otherwise noted in the applicable Technical Specifications, for each item.
- C. Submittals shall contain:
 1. Date of submission and dates of any previous submissions.
 2. Owner RFP / Bid number.
 3. The names of:
 - a. Contractor.
 - b. Subcontractor.
 - c. Supplier.
 - d. Manufacturer.
 4. Identification of the product, with the applicable Specification Section number.
 5. Field dimensions, clearly identified as such.
 6. Relation to adjacent or critical features of the Work or Materials.
 7. Applicable standards, such as ASTM or Federal Specification numbers.
 8. Identification of deviations from Contract Documents and justification.

9. Identifications of revisions on re-submittals.
10. Additional information as required by Contract Documents.
11. An 8 in. x 3 in. blank space for Contractor and Architect/Engineer stamps.

- D. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by the Architect / Engineer of record or Owner review of submittals
- E. Numbering system established by the Contractor shall be agreeable to the Owner

1.09 RESUBMISSION REQUIREMENTS

- A. Contractor will make any corrections or changes in the submittals required by the Architect / Engineer of record or the Owner, mark number of submission, and resubmit as required until approved; none of this shall be of any cost to the Owner.
- B. Shop Drawings and Product Data:
 1. Contractor will revise initial drawings and data, and resubmit as specified for the initial submittal.
 2. Contractor will indicate any changes which have been made other than those requested by the Architect / Engineer of record or the Owner.
 3. Mark number of submission and resubmit until accepted.
- C. Samples: Contractor will submit new samples as required for initial submittal. Remove samples, which are "rejected" or designated "resubmit."

1.10 REVIEW RESPONSIBILITIES – ARCHITECT / ENGINEER OF RECORD (A/E)

- A. The A/E shall review submittals, when applicable, with responsible promptness in accordance with the requirements of the Project Manual.
- B. The A/E will affix stamp and initials or signature, and indicate requirements for revisions and re-submittal, if any.
- C. The A/E will return submittals to Contractor, with copy of transmittal to Owner, for distribution, or for resubmission within five (5) days of original receipt.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used.

END OF SECTION 01330

SECTION 01331

SCHEDULE OF VALUES

PART 1 – GENERAL

1.01 RELATED REQUIREMENTS

- A. Contractor shall submit to the Owner a Schedule of Values with line items allocated to various portions of the Work for the purpose of monitoring the progress of the work and administration of the Application for Payment Process with their response (Bid) to the RFP.
- B. Provide Owner, after receipt of the Notice to Proceed (NTP) and upon request by the Owner, including support values and data substantiating their accuracy and correctness.
- C. Division 0, Bidding and Contract Documents in the Project Manual.
- D. Division 1, General Requirements in the Project Manual.

1.02 FORM AND CONTENT

- A. The Schedule of Values shall be tabulated to correspond with the Contractor's Application for Payment form, and shall be identified with:
 - 1. Title of Project, Location and Owner RFP or Bid Number.
 - 2. Project Manager for Contractor
 - 3. Name and Address of Contractor
 - 4. Contract Designation
 - 5. Date of Submission
- B. Schedule of Values shall be presented in accordance with the CSI format on a line item basis
- C. Listing of Component Items:
 - 1. Identify each line item with the number and title of the respective major section of the Technical Specifications.
 - 2. Provide breakdown of Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and Progress Reports. Break principal subcontract amounts down into several line items by completed task in various locations.
 - 3. Round off amounts to nearest whole dollar, total of all listed values shall equal total Contract Sum.
 - 4. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on Schedule of Values for initial cost of materials, for each subsequent state of completion, and for total installed value of that part of the Work.
 - 5. Costs of actual work-in-place may be shown as separate line items in Schedule of Values, such as:
 - a. Bonds
 - b. Insurance
 - c. Temporary facilities, services and controls.
 - d. Field supervision and layout
 - e. Testing
 - 6. Separate material cost and labor cost as directed or requested by the Owner

- D. For each major line item whose value is larger than five thousand dollars (\$5,000.00) list sub-values of major products or operations under the item.
- E. For various portions of the Work:
 - 1. Each item shall include a directly proportional amount of overhead and profit.
 - 2. For items on which progress payments will be requested for stored materials, break down the value into:
 - a. Cost of materials, delivered and unloaded, with taxes paid.
 - b. Total installed value.
- F. The sum of all values listed in the Schedule of Values must equal the total Contract Sum.

1.03 SUB-SCHEDULE OF UNIT MATERIAL VALUES

- A. As needed, see Exhibit H-Unit Price Schedule.

1.04 RESUBMITTAL

- A. After review by the Owner, the Contractor may be requested to revise and resubmit Schedule of Values as may be determined appropriate by the Owner.
- B. Revised and approved Schedule of Values shall be resubmitted as part of monthly Application for Payment.

1.05 MATERIALS STORED OFF - SITE

- A. Payment for materials and equipment stored off – site, and not on the property of Georgetown County shall be subject to, and comply with the following:
 - 1. Prior written approval from the Owner, of materials and equipment to be stored, and location of facilities to be used for storage.
 - 2. Storage of materials and equipment will be in a bonded warehouse. Proof of insurance shall be provided to the Owner in the name of Georgetown County.
 - 3. Contractor shall furnish an inventory, including invoices, for all stored materials and equipment that are included in the Application for Payment using a form acceptable to and approved by the Owner.
 - 4. Contractor shall issue a Bill of Sale to the Owner for all items.

PART 2 - PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION 01331

SECTION 01400

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor's Quality Control (QC), in addition to customary testing and control requirements and those included in the Construction Contract Documents.
- B. Manufacturer's field services, coordinated by the Contractor.

1.02 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents of the Project Manual.
- B. Division 1, General Requirements of the Project Manual.

1.03 GENERAL QUALITY CONTROL

- A. Maintain Quality Control over construction activities, suppliers, manufacturers, products, services, site conditions, and workmanship of all personnel to assure Work is of specified quality.
- B. Quality inspections:
 - 1. Contractor shall be the first line of quality control and shall review all items for compliance with the Drawings and Technical Specifications reviewed and approved by the Owner. Prior to Owner's Testing Laboratory inspectors performing Quality Assurance (QA) review and inspections such as rebar placement, asphalt and concrete, piling inspection, soil compaction, etc., the Contractor shall have verified conformance to the requirements of the Construction Contract Documents, plans and technical specification prepared by the Architect / Engineer of record and reviewed and approved by the Owner.
 - 2. Maintain a written Quality Assurance / Control Program establishing the methods of assuring compliance to the contract documents. The Program shall be submitted to, reviewed and approved by the Owner. Quality Control personnel shall be identified at the initiation of the Project and shall be adequate to monitor the Work effectively and to enforce the Quality Assurance / Control procedures.
 - 3. Inspect each phase of Work for compliance with Contract Documents, plans and specification prepared by the Architect / Engineer of record and reviewed and approved by the Owner.
 - 4. Contractor shall have defective conditions corrected before calling for inspections and starting subsequent operations which would cover or are dependant upon the Work in question.
 - 5. Where visual inspection is not sufficient, such as in verifying slope of pavement or depth of retention / detention ponds for proper drainage, use instruments with qualified operators to inspect work.
 - 6. Secure the services of a testing laboratory when necessary to assist in evaluating quality.

1.04 WORKMANSHIP

- A. Comply with industry standards, except when more restrictive tolerances or specified requirements are called for in Construction Contract Documents, plans and specifications prepared by the Architect / Engineer of record and reviewed and approved by the Owner.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stress, vibration and other forces such as, but not limited to hurricane force winds.

1.05 MANUFACTURER'S INSTRUCTIONS

- A. When required by the Technical Specifications, submit manufacturer's current printed instructions, in the quantity required for product data, for delivery, storage, assembly, installation, startup, adjusting and finishing, as necessary.
- B. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Construction Contract Documents, plans and technical specifications prepared by the Architect / Engineer of record and reviewed and approved by the Owner, Contractor shall re-submit and provide written clarification and explanation to the Architect / Engineer of record and the Owner.

1.06 MANUFACTURER'S CERTIFICATES

- A. When required by the Technical Specifications, supplier/manufacturer shall provide qualified personnel to observe field conditions, conditions of the surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting and balancing of equipment as applicable, and to make appropriate recommendations.

1.07 MANUFACTURER'S FIELD SERVICES

- A. When specified in the respective Technical Specification Sections, the supplier/manufacturer will provide qualified personnel to observe field conditions, conditions of the surfaces and installation, quality of workmanship, start-up of equipment, testing, adjusting and balancing of equipment as applicable, and to make appropriate recommendations.
- B. Manufacturer's Representative shall submit written report to Architect / Engineer of record and the Owner listing observations and recommendations.

1.08 CONTRACTOR'S CERTIFICATION

- A. Contractor shall supply written certification that the Work, as installed, has been reviewed by him/her for compliance with the Contract Documents, applicable Drawings and Technical Specifications.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION 01400

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Unless otherwise required by a Section of the Technical Specifications, the Owner shall employ and pay for the services of an Independent Testing Laboratory to perform specified testing of work and materials at the Project Site or at point of manufacture. This is intended to provide Quality Assurance (QA) of the work performed and material provided by the Contractor.
 - 1. Contractor shall cooperate with the testing laboratory to facilitate the execution of its required services.
 - 2. Contractor shall incorporate recommendations from Owner's testing results.
 - 3. Contractor shall obtain testing prior to Owner's testing as may be necessary.
 - 4. Owner's testing shall not be a substitute for Contractor's own Quality Control (QC) measures.
- B. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual, without exception.

1.02 RELATED REQUIREMENTS

- A. Conditions of the Contract: Contractor shall conduct, or have performed all inspections and testing required by laws, ordinances, rules, regulations, orders, or approvals of public authorities and as may be specified in the Construction Contract Documents..
- B. Each specification section listed: Contractor shall perform each inspection and laboratory test required, and standards for testing as specified in the Construction Contract Documents.
- C. Division 1, General Requirements of the Project Manual.

1.03 QUALIFICATIONS OF LABORATORY

- A. Meet "Recommended Requirements for Independent Laboratory Qualification," published by American Council of Independent Laboratories.
- B. Comply with the following requirements:
 - 1. ANSI/ASTM D3740: Practice for Evaluation of Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
 - 2. ANSI/ASTM E329: Standard Recommended Practice for Inspection and Testing for Concrete, Steel, and Bituminous Materials as Used in Construction.
- C. Authorized to operate in the State of South Carolina

- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during the most recent tour of inspection, with memorandum of remedies of any deficiencies reported by the inspection.
- E. Testing Equipment:
 - 1. Calibrated at reasonable intervals by devices of accuracy traceable to either:
 - a. National Bureau of Standards.
 - b. Accepted values of natural physical constants.
- F. Employment of testing laboratory shall in no way relieve Contractor of obligation to perform Work in accordance with requirements of the Construction Contract Documents.
- G. Failure on part of Owner to perform any tests of materials shall in no way relieve the Contractor of responsibility of furnishing materials or performing work conforming to the Construction Contract Documents.

1.04 LABORATORY DUTIES

- A. Cooperate with the Owner, Architect / Engineer of record and Contractor; provide qualified personnel after due notice from the Owner or Contractor.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified standards.
 - 2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify Owner, Architect / Engineer of record and Contractor of observed irregularities or deficiencies of work or products.
- D. Promptly submit written report of each test and inspection: one (1) copy each to Owner , Architect / Engineer of record and Contractor. Each report shall include:
 - 1. Date issued.
 - 2. Project title and location
 - 3. Owner RFP or Bid Number
 - 4. Testing laboratory name, address and telephone number.
 - 5. Name and signature of laboratory inspector.
 - 6. Date and time of sampling or inspection.
 - 7. Record of temperature and weather conditions.
 - 8. Date of test.
 - 9. Identification of product.
 - 10. Location of sample or test in the Project.
 - 11. Type of inspection or test.
 - 12. Results of tests and compliance with Contract Documents.
 - 13. Interpretation of test results, when requested by Owner
- E. Perform additional tests as may required by the Owner.

1.05 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
 - 1. Release, revoke, alter or enlarge on requirements of Construction Contract Documents.
 - 2. Approve or accept any portion of the Work.
 - 3. Perform any duties of the Contractor.
 - 4. Stop the Work.

1.06 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate, together with laboratory personnel; provide access to the point/location of the Work, and to manufacturer's operations.
- B. Secure and deliver to laboratory at designated location(s) adequate quantities of representational material proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other material mixes which required control by the testing laboratory.
- D. Furnish copies of Products test reports to the Architect / Engineer of record and Owner as required.
- E. Furnish incidental labor and facilities:
 - 1. To provide access to Work to be tested.
 - 2. To obtain and handle samples at the Project Site or at the source of the product to be tested.
 - 3. To facilitate inspections and tests.
 - 4. For storage and curing of test samples.
- F. Notify laboratory twelve (12) hours in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - 1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence or inability to perform the prescribed Work at the scheduled time.
- G. Make arrangements with laboratory and pay for services to perform inspections, sampling and testing required:
 - 1. For the Contractor's convenience.
 - 2. When the initial tests or inspections indicate Work does not comply with Construction Contract Documents (i.e., re-tests).

1.07 SOURCE OF MATERIALS

- A. Source of supply of each of materials required shall be acceptable to the Architect / Engineer of record and Owner before delivery is started.
- B. Representative samples shall be submitted for inspection or tests.

- C. Results obtained from testing samples will be used for preliminary approval, but will not be used as final acceptance of materials.
- D. The Owner may test materials proposed to be used at any time during preparation and use.
- E. If it is found that sources of supply, which have been approved, do not furnish product of uniform quality, or if product from any source proves unacceptable at any time, Contractor shall furnish approved material from another source without additional cost to Owner or delay in Substantial Completion date.

1.08 IDENTIFICATION

- A. Required samples submitted by Contractor shall be properly labeled for identification.
- B. Materials and/or equipment that have been inspected and/or tested shall be stored in a controlled area with suitable identification referencing tests and certifications.
- C. Continuous inventory shall be kept of all items in this area controlled by log in and log out with receiving and disbursing signatures.
- D. Copies of receiving or disbursing actions shall be sent to the Owner on a daily basis.
- E. Disbursing records shall show final destination and installation.

1.09 MATERIAL STORAGE

- A. Materials shall be stored so as to ensure preservation of their quality and fitness for Work, in accordance with requirements of Section 01620, Storage and Protection and as may be required in the applicable Technical Specifications.

1.10 SCHEDULE OF INSPECTIONS AND TESTS

- A. Refer to each individual Section of the Project Manual for specific testing requirements, or as otherwise required by the Drawings, Technical Specifications of the Construction Contract Documents or appropriate regulatory and approval agency.

PART 2 – PRODUCTS

Not Used.

PART 3 – EXECUTION

Not Used.

END OF SECTION 01410

SECTION 01500

TEMPORARY FACILITIES AND UTILITIES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual and the Construction Contract Documents.
- B. Furnish, install and maintain temporary utilities required for construction, to be removed at completion of Work.
- C. Provide and maintain methods, equipment, and temporary construction required to control environmental conditions at construction site and other areas under Contractor's control. Remove evidence of temporary facilities at completion of Work.
- D. Furnish and pay for installation of all temporary utilities, permanent utilities except as provided by Owner, or fuel required for testing of installed equipment and systems.

1.02 RELATED REQUIREMENTS

- A. Division 1, General Requirements of Project Manual.

1.03 REQUIREMENTS OF REGULATORY AGENCIES

- A. Comply with National Electric Code (NEC), federal, state, and local codes and regulations and with utility company requirements.
- B. Comply with State of South Carolina regulatory agencies having judicial authority.
- C. All affected Utility Organizations should be contacted by the Contractor to arrange temporary utilities. The appropriate Utility Organization, as well as other Contacts are listed on the cover sheet of the construction contract drawings.

PART 2 – PRODUCTS

2.01 MATERIALS, GENERAL

- A. Materials may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.

2.02 TEMPORARY ELECTRICITY AND LIGHTING

- A. Arrange with City of Georgetown – Electric utility for temporary service.
- B. Contractor will pay all electrical consumption charges.

- C. Furnish and install circuit and branch wiring, transformers, temporary meters, weatherproof area distribution boxes, and any other devices necessary, located so that power and lighting is available throughout the construction by the use of construction-type power cords.
- D. Provide adequate artificial lighting for day and night operations as necessary, minimum 35-foot candle power for finish work within all areas of the Project.

2.03 TEMPORARY HEAT AND VENTILATION

Not Used

2.04 TEMPORARY TELEPHONE SERVICE

Not Used

2.05 TEMPORARY WATER

- A. Arrange with City of Georgetown Utilities for temporary service.
- B. Furnish and install temporary water line and distribution from a point designated by the Owner, if determined to be necessary.
- C. Contractor will pay all water consumption charges.

2.05 DRINKING WATER

- A. The Contractor shall furnish potable water for drinking of all personnel connected with the Work of this contract.
- B. Pipe or transport water to keep clean and fresh.
- C. Provide drinking water in suitable containers or dispensers and paper cups located in close proximity to where work is in progress.

2.06 TEMPORARY SANITARY FACILITIES

- A. Provide portable chemical-type sanitary facilities in compliance with applicable health laws, and state, county and local regulations and ordinances.
- B. Service, clean and maintain facilities and enclosures.
- C. Facilities shall be fitted with approved sanitary holding capacity and shall be emptied periodically to prevent overflow. Legal disposal of sanitary waste must be off-site and is Design/Builder's responsibility.
- D. Construction workers and project staff shall not use permanent plumbing facilities
- E. Sanitary facilities failing to meet required standards or maintenance methods shall be corrected immediately.
- F. Contractor will pay all costs for installation, maintenance and removal.

2.07 TEMPORARY FIRE PROTECTION

- A. During construction, provide temporary fire protection and life safety provisions in accordance with local jurisdiction requirements, the International Code and / or NFPA Standards.
- B. A “Hot Work” permit may be required when welding or cutting operations are to take place. Take necessary precautions in welding or cutting operations to keep work area free of combustible materials. Do not use welding equipment around flammable liquids or vapors.
- C. Keep welding and cutting equipment outdoors wherever possible. Remove welding and cutting equipment from any structure daily, wherever practical.
- D. At completion of welding or cutting operations, inspect work and adjacent area for hazards. When operations are near any building opening, inspect areas above, below or adjacent to work area hazards.
- E. Do not open, turn off, interfere with, attach any pipe or hose to, or connect anything to any fire hydrant, stop valves, or stop cock, or tap any water main without prior written permission of proper authority or the Owner.

PART 3 – EXECUTION

3.01 GENERAL

- A. Comply with local jurisdiction and all other applicable requirements as stated in this Section.
- B. Contractor shall obtain and pay for all required permits for the Work.

3.02 REMOVAL

- A. Completely remove from the project site temporary materials and equipment when their use is no longer required.
- B. Clean and repair damage caused by temporary installations or use of temporary facilities immediately after removal.
- C. Restore existing facilities used for temporary services to specified, or to original, condition.
- D. Restore permanent facilities used for temporary services to specified condition.
 - 1. Prior to final inspection, remove temporary lamps and install new lamps where appropriate.

END OF SECTION 01500

SECTION 01510

TEMPORARY CONSTRUCTION CONTROLS

PART 1- GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual, without exception.
- B. Furnish, install and maintain temporary controls required for construction.
- C. Remove all temporary controls at completion of Work.

1.02 RELATED REQUIREMENTS

- A. Division 1, General Requirements of the Project Manual.

1.03 CONSTRUCTION SITE CLEANING

- A. Maintain areas within limits of the Project Work Site free of extraneous debris and litter.
- B. Initiate and maintain specific program to prevent accumulation of debris at construction site, storage and parking areas, or along access roads and off site hauls routes.
 - 1. Furnish on-site containers for collection of waste materials, debris and rubbish.
 - 2. Prohibit overloading of trucks to prevent spillage on access and haul routes.
 - 3. Provide periodic inspection of traffic areas to enforce requirements.
 - 4. Remove waste material, debris and rubbish from site and building area daily, or sooner as otherwise needed.
 - 5. Do not drop or throw materials from heights. Lower waste material in a controlled manner and with as few handlings as possible.
 - 6. During entire construction period, and at all times, keep the site access entry road, parking areas free from accumulation of waste materials, debris and rubbish caused by the Work of this Project.
 - 7. Dirt and debris shall be removed from all surfaces prior to closure of all areas (walls, ceilings, chases, etc.).
- C. Hazards Control:
 - 1. Store volatile wastes in covered metal containers.
 - 2. Remove containers from premises daily.
 - 3. Prevent accumulation of wastes, which create hazardous conditions.
 - 4. Provide adequate ventilation during use of volatile or noxious substances.
- D. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws:
 - 1. Do not burn or bury rubbish and waste materials on project site.
 - 2. Do not dispose of wastes into streams or waterways.
 - 3. Do not dispose of volatile wastes such as mineral spirits, oil or paint thinner in storm or sanitary drains.

1.04 DUST CONTROL

- A. Provide positive methods and apply dust control materials to minimize raising dust from construction operations and provide positive means to prevent air-borne dust from dispersing into atmosphere.
- B. Clean interior building areas to prevent accumulation of dirt and debris and execute prior to start of finish painting, special coatings, and/or other finish material installations.
- C. Wet down materials and rubbish to prevent blowing dust.
- D. Schedule cleaning operations so that dust and other contaminants resulting from cleaning process will not fall on wet, newly painted surfaces.
- E. Continue cleaning on an as-needed basis until building and/or site is ready for beneficial occupancy.

1.05 EROSION AND SEDIMENT CONTROL

- A. Plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation. Wetland areas shall be protected as well.
 - 1. Hold areas of bare soil exposed at one time to minimum.
 - 2. Provide temporary control measures such as berms, dikes, and drains.
 - 3. Comply with federal, state and local regulations.
- B. Construct fills and soil waste areas by selective placement to eliminate surface soils or clay, which will erode.
- C. Periodically inspect earthwork to detect any evidence of start of erosion, apply corrective measures as required for erosion control.

1.06 POLLUTION CONTROL

- A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by discharge of noxious substances from construction operations.
- B. Contractor is responsible only for pollution control of the immediate Work of the Contract, the actions and operations of the Contractor, and the workers employed or contracted to Contractor. Provide equipment and personnel to perform emergency measures required to contain spillage, and to remove contaminated soil or liquids.
- C. Take special measures to prevent harmful substances from entering public waters. Prevent disposal of wastes, effluents, chemicals or other such substances adjacent to basins, or in sanitary or storm sewers.
- D. Provide systems for control of atmospheric pollutants. Prevent toxic concentrations of chemicals. Prevent harmful disposal of pollutants into atmosphere.

1.07 WATER CONTROL

- A. Provide methods to control surface water to prevent damage to project site or adjoining properties. Control fill, grading, and ditching to direct surface drainage away from excavations, pits, tunnels and other construction areas. Direct drainage to proper runoff.
- B. Provide, operate, and maintain hydraulic equipment of adequate capacity to control surface and water.
- C. Dispose of drainage water in manner to prevent flooding, erosion or other damage to any portion of site or adjoining areas.
- D. Dewater areas in accordance with applicable local and state requirements and accepted professional practice.

1.08 EARTH CONTROL

- A. Contractor shall, at his/her sole cost, remove excess soil, pier spoils, etc., at time of generation.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTIONS

3.01 REMOVAL

- A. Contractor shall, at his/her sole cost, remove temporary construction controls at the completion of the Work, or as required by execution of the Work or as may be directed by the Owner.

END OF SECTION 01510

SECTION 01530

BARRIERS

PART 1 – GENERAL

1.01 REQUIREMENTS

- A. The Contractor shall comply with and be responsible for all the requirements of Division 1, General Requirements of the Project Manual, without exception.
- B. Provide and maintain barriers and lighted barriers for the protection of personnel and materials in accordance with the requirements of applicable state and local codes.
- C. Install barriers at the start of construction.

1.02 RELATED WORK

- A. Section 01510, Temporary Construction Controls

1.03 REGULATORY AGENCIES

- A. Comply with federal, state, and local, municipal regulations and with utility company and insurance agencies' requirements.

PART 2 – PRODUCTS

2.01 MATERIALS, GENERAL

- A. Materials and equipment must be adequate in capacity for the required usage, and not violate applicable codes and standards.
- B. Provide warning signs to help prevent damage and injury.
- C. Should it become necessary to remove safety items it shall be the Contractor's responsibility to replace the item immediately in conformance with applicable codes, standards and regulations.
- D. Wood materials used in barricades and barriers within any building and in material storage areas shall be fire-retardant.

2.02 BARRICADES

- A. Protect all vertical shafts with safe, temporary railings, adequately braced.
- B. Cover trenches and holes when not in use. Erect barriers at sharp changes in plane of more than 3 feet.
- C. Protect all building openings with safe, temporary railings adequately braced.

2.03 CONSTRUCTION FENCE

- A. Prior to starting Work at Project Site the Contractor, as may be directed by the Owner, shall install enclosure fence with locked entrance gates.
- B. Provide construction fence around material storage and construction areas to prevent unauthorized access. Comply with local, municipal and / or Georgetown County requirements for construction barriers.
- C. Provide minimum number of gates, padlocked during non-working hours as may be directed by the Owner.
- D. Locate personnel gates as necessary to provide controlled entry from construction parking to construction area, as may be directed by the Owner.

2.04 PERIMETER SIGNAGE

- A. Provide perimeter signage as instructed in the drawings.

2.05 CONSTRUCTION LIGHTING

- A. Provide construction lighting throughout construction areas as may be required and necessary to maintain safety and security.
- B. Maintain lighting on a daily basis, including weekends, holidays, and foul-weather days so that the Project Site is adequately lighted at all times in the interest of safety and security.

PART 3 – EXECUTION

3.01 REMOVAL

- A. Contractor shall, at his/her sole cost, completely remove barricades, including barricade foundations when construction has progressed to a point that they are no longer required, and when requested by the Owner.

3.02 CLEANING

- A. Clean and repair damage caused by the Work of this Section. Fill and grade the areas of the Site to required elevations and slopes, and clean the area.

END OF SECTION 01530

SECTION 01550

ACCESS ROADS AND PARKING AREAS

PART 1 – GENERAL

1.01 REQUIREMENT INCLUDED

- A. The Contractor shall comply with and be responsible for all the requirements of Division 1, General Requirements of the Project Manual without exception.
- B. Access to and egress from the Project Site will be gained only via routes and through gates as shown on the Plans and approved by Owner. Equipment weight and height limits will be strictly enforced. Contractor is responsible for providing access roads capable of supporting construction traffic. Contractor and trade contractors of all tiers shall be responsible to comply with these requirements.
- C. Install barriers and necessary traffic controls at start of construction to protect public and leave in place throughout construction. Remove at end of construction.
- D. Contractor is responsible for assessing risk to public and providing lights, flagmen, traffic signals, stop signs or other necessary controls, as needed and approved by the Owner and / or the South Carolina Dept. of Transportation (SCDOT).
- E. Contractor shall be responsible to repair all damage to off site street, roads, curbs along haul routes and any existing site elements damaged by construction related traffic.

1.02 RELATED WORK

- A. NIC

1.03 REGULATORY AGENCIES

- A. Comply with federal, state and local codes and regulations, and with utility company and insurance agencies' requirements.

PART 2 – PRODUCTS

2.01 GENERAL

- A. If repair to public or private roadways is necessary due to damage by construction traffic, materials and methods used for repairs are to be acceptable to the applicable jurisdictional authority and are to match existing conditions. Contractor shall perform such work at his/her sole cost and expense.
- B. Provide warning signs to help prevent damage and injury and to promote safety.
- C. Should it become necessary to remove safety items, it shall be Contractor's responsibility to replace them immediately, in conformance with applicable regulations. Contractor shall perform such work at his/her sole cost and expense.

2.02 PARKING

- A. Contractor's vehicles and employee parking shall be confined to an area identified within the site limits and as directed by the Owner.

2.03 STAGING

- A. Contractor shall confine materials, products, equipment and temporary facilities within site limits and as directed by the Owner.

PART 3 – EXECUTION

3.01 REMOVAL

- A. Temporary construction access roads, drives, walks, and parking areas shall be removed at completion of Work or as required by execution of Work at the Contractor's sole cost and expense.
- B. Areas shall be returned to original condition unless otherwise required by the Owner.

END OF SECTION 01550

SECTION 01563

HANDLING OF INCIDENTAL FUEL SPILLAGE DURING CONSTRUCTION

PART 1 – GENERAL

1.01 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents in the Project Manual.
- B. Division 1, General Requirements in the Project Manual.
- C. South Carolina Dept. of Health and Environmental Controls (SCDHEC)

1.02 SCOPE

- A. This section consists of procedures to be followed in handling material contaminated with petroleum fuel products (hydrocarbons including petroleum, petroleum derivatives, hydraulics and like products) caused by incidental spillage (including leaks) from the Contractor's or his/her prime and sub-contractor's equipment.

Incidental spillage shall mean spillage of a quantity not greater than 25 gallons per incident, of vehicular or mechanical equipment fuel products, onto open ground and absorbed or not absorbed by the soils.

Spillage or leakage of petroleum fuel products in quantities in excess of 25 gallons shall be immediately remediated by the Contractor using applicable and appropriate procedure(s). Whenever such spillage or leakage occurs, the Contractor shall immediately implement the appropriate corrective actions as required.

- B. The provisions of this Section are limited to incidental petroleum fuel spillage on ground surfaces and it excludes fuel spillage onto surface waters.

1.03 APPLICABLE CODES

- A. The Contractor shall comply with all prevailing federal, state, and local environmental protection ordinances and codes governing and having application to and any discharges, intentional or accidental, which may cause water pollution and constitute a nuisance, and sanitary nuisance.
- B. Leaks and spillage may occur when using mechanical equipment. Equipment generated or lubricated with petroleum products, is prone to leaks or spillages, therefore proper management of "spillage incidents" is essential.

PART 2 – PRODUCTS

2.01 ABSORBENT MATERIALS

Contractor shall equip crews and/or provide machinery with the most efficient type of petroleum absorbent materials. These materials are available at petroleum equipment suppliers and must be readily accessible so that spillages can be quickly contained and prevented from becoming greater incidents. Fiber material, sand or cat litter may be used as an absorbent material. Sufficient

quantity of absorbent material capable of absorbing up to 25 gallons of petroleum fuel products shall be stocked at the job site at all times.

PART 3 - EXECUTION

3.01 PROCEDURES

- A. Personnel handling waste materials must have a minimum of 40 hours training as defined in 29 CFR 1910.120 and in accordance with the certified OSHA course.
- B. Perform work as specified herein and in accordance with the applicable provisions of South Carolina Dept. of Transportation (SCDOT) and South Carolina Dept. of Health and Environmental Controls (SCDHEC). No payment will be made to the Contractor for the cost of handling and disposing of leaks, spillages and materials, soils and environment contaminated by such leaks or spillages.

The procedure for the proper handling and disposal of contaminated soils and absorbent materials is readily available through the aforementioned agencies:

- C. The steps outlined below are minimum requirements and are merely presented as guidelines. They do not constitute a complete compliance procedure.

STEP 1:

If a fuel contamination to open ground has been discovered, check for the origin of that leak or spillage. Then stop the spillage or leak and positively contain it, and then use absorbents to collect the discharged liquid. Immediately notify the Owner.

STEP 2:

Sand may be used to absorb ground surface spills while absorbent materials may be used to absorb ground spills as well as surface water spills. Once absorption of spilled fuels is complete the impacted (contaminated) absorbent materials shall be stored in 55-gallon steel drums (100-150 lbs.). If leaked or spilled fuel has been absorbed into the soils, excavate and containerize the impact (contaminated) soils. Soils may be stored in 55- gallon steel drums.

STEP 3:

The contaminated materials must be collected, containerized and otherwise properly stored and labeled prior to transport to a pre-approved storage, disposal or treatment facility. All drums used to store impacted (contaminated) absorbent material and/or contaminated soils shall be properly sealed and labeled with the following information.

Name of Company (Contractor)

RFP / Bid No.:

Location of origin:

Type of contents:

Type of containment:

Quantity: (e.g. 1 of 1)

Date:

Containerized by:

Labeled by:

END OF SECTION 01563

SECTION 01570

TRAFFIC REGULATION

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual, without exception.
- B. Construction parking control, flagmen, flares and lights, haul routes, traffic signs and signals, and removal.
- C. The Contractor shall comply with and be responsible for traffic control planning and implementation as may be directed and approved by SCDOT and the Owner.
- D. Maintenance of safety and convenience of public.

1.02 RELATED WORK

- A. Division 1, General Requirements of the Project Manual.

1.03 PUBLIC SAFETY AND CONVENIENCE

- A. Materials and equipment shall be stored and Work conducted to minimize obstruction to pedestrian movement and vehicular traffic. Materials and equipment stored in or near path of traffic shall be protected with appropriate warning signs and barricades. At night, or as otherwise required, equipment not in use shall be stored in such manner and location to not interfere with safe passage of pedestrians and vehicles. Contractor shall provide and maintain flagmen at points and for periods of time required to provide safety and convenience of traffic, and as may be required by the SCDOT and as directed by the Owner
- B. Contractor shall not close traffic to any bridge, culvert, or any other portion of public road except as designated in the Construction Contract Documents. Prior to closing any access way and/or structure, coordinate Work schedule with the Owner and the SCDOT if applicable.
- C. Contractor shall provide the Owner with notice at no less than 48 hours prior to movement of heavy equipment and/or wide or slow moving vehicles to or from Project Site. Contractor shall strictly adhere to vehicular routes established or as may be directed by the Owner and / or the SCDOT if applicable.

1.04 HAUL ROUTES

- A. Based on regulations prescribed by the South Carolina Dept. Transportation (SCDOT), Georgetown County or any other agency having jurisdiction, use only established roadways or use temporary roadways constructed by Contractor when and as authorized by the Owner. When materials are transported in executing the Work vehicles shall not be loaded beyond loading capacity recommended by manufacturer of vehicle or prescribed by federal, state, or local law or regulation. When it is necessary to cross

curbs or sidewalks, Contractor shall protect them from damage, and shall repair or pay for repair of all damaged curbs, sidewalks, roads and/or paving.

1.05 TRAFFIC SIGNS AND SIGNALS

- A. At approaches to site and on-site, install signs or signals at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public vehicular and pedestrian traffic. This should be included in the Contractor's approved Traffic Control Plan.
- B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
- C. Relocate traffic control signs and signals as Work progresses, to maintain safe and effective traffic control.
- D. Coordinate with construction signs described in Section 01580, Project Identification and Signs.

1.06 FLAGMEN

- A. Provide trained and equipped flagmen to regulate traffic when construction operations and/or traffic encroach on public vehicular or pedestrian traffic lanes.

1.07 FLARES AND LIGHTS

- A. Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic in landside areas only.

PART 2 – PRODUCTS

2.01 SIGNS, SIGNALS AND DEVICES

- A. Post-mounted and wall-mounted at parking areas to indicate spaces designated for use by construction personnel.
- B. Traffic control signals, as required, and as approved by SCDOT and the Owner.
- C. Traffic cones and drums and lights, as approved by SCDOT and the Owner.
- D. Flagmen equipment as required by SCDOT and the Owner.

PART 3 – EXECUTION

3.01 REMOVAL

- A. Contractor shall remove equipment and devices, at his/her sole cost, when no longer required. Repair damage caused by installation. Remove post settings to depth of three (3) feet.

END OF SECTION 01570

SECTION 01580

PROJECT IDENTIFICATION AND SIGNS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall comply with and be responsible for all requirements of the Project Manual, without exception.
- B. The Contractor shall comply with applicable requirements in this Section and more specific requirements of Section 00800, Special Project Conditions and Section 01100, Summary of Work.
- C. Furnish, install and maintain Project Signs.
- D. Provide temporary, on site informational signs to identify key elements of the construction facilities.
- E. Remove Project Signs upon completion of the construction Work of this contract.
- F. Allow no other signs to be displayed.
- G. Submit Shop Drawings of the proposed Project Sign within fifteen (15) calendar days of the Notice to Proceed (NTP).

1.02 RELATED REQUIREMENTS

- A. Division 1, General Requirements of the Project Manual.

PART 2 – PRODUCTS

2.01 SIGN MATERIALS

Refer to sheet C9.

2.02 TEMPORARY SIGNAGE

Refer to sheet C9.

PART 3 – EXECUTION

3.01 PREPARATION

The Contractor shall be responsible for the cost of preparing and installing the Sign.

3.02 MAINTAINANCE

The Contractor shall be responsible for the cost of maintaining the Sign.

3.03 REMOVAL

The Contractor shall be responsible for the cost of removing the Sign.

END OF SECTION 01580

SECTION 01590

FIELD OFFICE AND SHEDS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor shall comply with and be responsible for all requirements of the Project Manual without exception.
- B. Contractor shall comply with applicable requirements in this section and more specifically the requirements in Division 1, Section 01100, Summary of Work.

1.02 SCOPE

- A. Furnish, install and maintain temporary construction offices throughout duration of the Construction Work of this contract; remove at completion of Work.
- B. Furnish, install and maintain work sheds as required for construction. Remove at completion of Work.
- C. Restore Site to original condition, unless otherwise required by the Contract Documents.

1.03 RELATED WORK

- A. Division 1, General Requirements of the Project Manual are applicable.

PART 2 – PRODUCTS

2.01 FIELD OFFICES

- A. Furnish, install and maintain temporary field office during entire construction period for Contractor use and separate, but attached, office and plan room for Owner field representative.
- B. Field office shall be structurally sound, weather tight, with floors raised above ground meeting requirements of the local and applicable building Code. At Contractor's option, portable or mobile buildings may be used. Do not use mobile buildings for living quarters.
- C. Provide heating or air conditioning as dictated by outside temperatures.
- D. Field office shall have operable, screened windows with locks.
- E. Contractor shall provide his own janitorial services.
- F. Field offices shall include either fixed or portable plan racks or shelving.
- G. The Contractor, prime and each subcontractor shall provide adequate provisioned first aid kits on the Project Site for personnel employed by him/her and for the convenience of all workmen employed on the Project Site.

H. Field office shall be located by Contractor, or as may be directed by the Owner.

2.02 DRINKING WATER

- A. Furnish potable water for drinking of all personnel connected with the Work of this contract.
- B. Pipe or transport water to keep clean and fresh.
- C. Provide drinking water in suitable containers or dispensers and paper cups located in close proximity to where work is in progress.
- D. Provide field offices with bottled drinking water, dispenser and cooling apparatus. Contractor shall pay for service, maintain daily, and remove when offices are removed.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Construct or locate construction offices and sheds on proper foundation, with utility connections, provide steps and landing at entrances.
- B. Locate a thermometer in a convenient outdoor location, out of direct sunlight. Maintain record of a daily weather conditions to include temperature range, wind conditions, time and amount of rainfall, and sky conditions.
- C. Locate construction offices and sheds as directed by the Owner

3.02 MAINTENANCE

- A. Provide daily janitorial cleaning and maintenance of construction office, sheds, furnishings, and equipment as required or requested.

3.03 REMOVAL

- A. Remove construction office and sheds including foundations and contents at completion of project, when no longer needed, or as directed by the Owner
- B. Grade site to required elevation and clean the area upon the removal of the temporary offices and sheds.

END OF SECTION 01590

SECTION 01600

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents of the Project Manual without exception.
- B. Division 1, General Requirements of the Project Manual without exception.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions made after award of the Construction Contract.
- B. Procedural requirements governing the Contractor's selection of products and product options are included under Section 01610, Materials and Equipment.

1.3 DEFINITIONS

- A. Definitions used in this Section are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor after award of the Contract are considered requests for "Substitutions". The following are not considered substitutions:
 - 1. Substitutions requested by Bidders during the bidding period, and accepted prior to award of Contract, are considered as included in the Construction Contract Documents and are not subject to requirements specified in this Section for substitutions.
 - 2. Revisions to Construction Contract Documents requested by Georgetown County.
 - 3. Specified options of products and construction methods included in Contract Documents.
 - 4. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will be considered if received within thirty (30) calendar days after commencement of the Work. Requests received more than thirty (30) calendar days after commencement of the Work may be considered or rejected at the discretion of the Owner.
 - 1. Submit three (3) copies of each request for substitution for consideration. Submit requests in the form to be provided by the Owner and in accordance with procedures required for Change Order proposals to be established by the Owner
 - 2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Technical Specification Section and Drawing numbers.

Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

- a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 - d.. A statement indicating the substitution's effect on the Contractor's Construction Progress Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - e. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - f. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Construction Contract Documents. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately.
3. Owner's Action: Within one (1) week of receipt of the request for substitution, the Owner may request additional information or documentation necessary for evaluation of the request. Within two (2) weeks of receipt of the request, or one (1) week of receipt of the additional information or documentation, whichever is later, the Owner will notify the Contractor of acceptance or rejection of the proposed substitution. If a decision on use of a proposed substitute cannot be made or obtained within the time allocated, use the product specified by name. Acceptance will be in the form of a Change Order.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

- A. Conditions: The Contractor's substitution request will be received and considered by the Owner when one or more of the following conditions are satisfied, as determined by the Owner, otherwise requests will be returned without action except to record noncompliance with these requirements.
1. Extensive revisions to Construction Contract Documents are not required.
 2. Proposed changes are in keeping with the general intent of the Construction Contract Documents.
 3. The request is timely, fully documented and properly submitted.
 4. The request is directly related to an "or equal" clause or similar language in the Construction Contract Documents.
 5. The specified product or method of construction cannot be provided within the Contract time. The request will not be considered if the product or method cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.
 6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 7. A substantial advantage is offered the Owner in terms of cost, time, energy conservation or other considerations of merit after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect / Engineer of record for redesign,

- increased cost of other construction elements by the Owner or other separate Contractors, and similar considerations.
8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide a warranty required by the Construction Contract Documents and where the Contractor certifies that the proposed substitution will provide the required warranty.
- B. The Contractor's submittal and the Owner's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents does not constitute an acceptable or valid request for substitution, nor does it constitute approval.
- C. Substitution request constitutes a representation that the Contractor:
1. Has investigated the proposed product and determined that it meets or exceeds, in all respects, the product specified.
 2. Will provide the same warranty for substitution as for the product specified.
 3. Will coordinate installation and make other changes, which may be required for work to be complete in all respects.
 4. Waives claims for additional costs, which may subsequently become apparent. All costs associated with the substitution will be paid for by the Contractor regardless of approvals given, and regardless of subsequent difficulties experienced as a result of substitutions.

PART 3 - EXECUTION

Not Used

END OF SECTION 01600

SECTION 01610

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall comply with and be responsible for all requirements of the Project Manual, without exception.
- B. The Contractor shall comply with the applicable requirement in this Section, and the requirements of Division 1, Section 01100 Summary of Work.
- C. Division 1, Section 01600, Product Requirements.
- D. Division 1, Section 01770, Closeout Procedures

1.02 RELATED WORK

- A. Division 1, General Requirements of the Project Manual.

1.03 SCOPE

- A. General storage and protection of project materials and equipment.
- B. Furnish, install and maintain storage sheds as required for protection of materials and equipment. Remove at completion of Work.
- C. Exterior storage requirements for all specified materials and equipment requiring protection.

1.04 MATERIAL AND EQUIPMENT INCORPORATED INTO WORK

- A. Comply with applicable specifications, manufacturer's recommendations and standards.
- B. Comply with size, make, type and quality specified or as specifically accepted in writing by the Owner.
- C. Design, fabricate, assemble deliver and install products in accordance with engineering and shop practices normal to trade.
- D. Manufacture like parts of duplicate units to standard interchangeable sizes and gauges. Two or more items of same kind shall be identical by same manufacturer.
- E. Products shall be suitable for intended purpose.
- F. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically accepted in writing.

- G. Do not use material or equipment for any purpose other than for which it is designed or is specified.

1.05 IDENTIFICATIONS AND NAMEPLATES

- A. Nameplates, trademarks, and other identifying marks on manufactured and fabricated items are not permitted on surfaces exposed to view in public spaces, including elevators and escalators except as noted otherwise in the Construction Contract Documents. This does not apply to UL labels.

1.06 QUALITY ASSURANCE

- A. Materials specified are to define standard of quality or performance and to establish basis for evaluation of proposals.
- B. Comply with individual Technical Specification Sections and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Technical Specification Section shall be of same manufacturer and shall be interchangeable, unless otherwise required.

1.07 PRODUCT OPTIONS

- A. For Products specified only by reference standard, select Product meeting that standard by any manufacturer.
- B. For Products specified by naming only one Product and manufacturer, select any one of the products and manufacturers named which complied with the Technical Specifications.
- C. For products specified by naming only one Product and manufacturer, there is no option and no substitution will be allowed.

1.08 PRODUCTS LIST

- A. Within twenty (20) calendar days after award of Contract, submit to the Owner three (3) copies of complete list of major Products, which are proposed for installation.
- B. Tabulate Products by Technical Specification Section number and title.
- C. For products specified only by reference standards list for each such Product:
 - 1. Name and address of manufacturer.
 - 2. Trade name.
 - 3. Model or catalogue designation.
 - 4. Manufacturer's data:
 - a. Reference standards.
 - b. Performance test data.
- D. The Owner will coordinate with the Architect / Engineer of record and reply in writing stating whether there is reasonable objection to listed items. Failure to object to a listed item shall not constitute a waiver of the requirements of the Construction Contract Documents.

1.09 MANUFACTURER'S INSTRUCTIONS

- A. When Construction Contract Documents require installation of work to comply with manufacturers printed instructions, obtain and distribute copies of instructions to parties involved in installation, including two (2) copies to the Owner, prior to commencing work.
- B. Maintain one (1) set of complete instructions at job site during installation and until work is complete.
- C. Maintain copies for Project Record Documents.
- D. Handle, install, connect, clean, condition and adjust products in strict accord with manufacturer's instructions and in conformity with specified requirements.
- E. Should job conditions or specified requirements conflict with manufacturer's instructions, notify the Owner in writing for further instructions. Do not proceed with Work without clear instructions.
- F. Perform Work in accordance with manufacturer's instructions. Do not omit preparatory steps on installation procedures unless specifically modified or exempted by the Contract Documents.

1.10 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of materials and equipment in accordance with construction schedules. Coordinate to avoid conflict with Work and conditions at Site. Avoid congesting traffic.
- B. Deliver materials and equipment in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
- C. Immediately upon delivery, inspect shipments to assure compliance with requirements of the Construction Contract Documents and accepted submittals, and that products are properly protected and undamaged.
- D. Promptly remove unsatisfactory materials from Site.
- E. Furnish equipment and personnel to handle products by methods necessary to prevent soiling or damage to products or packaging.

1.11 STORAGE

- A. Store materials subject to damage from exposure to weather in weather tight storage facilities of suitable size with floors raised above ground. Materials not subject to weather damage may be stored on blocks off ground.
- B. Store fabricated products in accordance with manufacturer's instructions, seals and labels intact and legible. Store product subject to damage by elements in weather tight enclosures. Maintain temperature and humidity within ranges required by manufacturer's instructions.
- C. Cover materials, which are subject to deterioration with breathable, impervious sheet covering to provide adequate ventilation to avoid condensation.

- D. Store loosed granular materials in well-drained area on solid surfaces to prevent mixing with foreign matter and cover during inclement weather. Store cementitious and clay products clear of earth or concrete floors, away from walls.
- E. Arrange storage in manner to permit easy access for inspections.
- F. Protect metal from damage, dirt or dampness. Furnish flat, solid support for sheet products during storage.
- G. Make periodic inspections of stored materials to verify that products are maintained under specified conditions and are free from damage or deterioration.
- H. Do not use materials in work that have deteriorated, become damaged or are otherwise unfit for use.
- I. Store paints in assigned room or area kept under lock and key. Prevent mixing of refuse or chemically injurious materials or liquids with stored materials.
- J. Remove oil, rags and other combustible materials daily and take precautions to prevent fire hazard.
- K. Do not load structure during construction by storing materials with load greater than structure is calculated to support safely. Such storage is subject to approval by the Owner.
- L. Provide substantial platforms, blocking, or skids to support fabricated products above ground; slope to provide drainage. Provide surface drainage to prevent erosions and pounding of water.
- M. Pipe and conduit stored outdoors shall have open ends sealed to prevent entrance of dirt, moisture, etc.

1.12 PROTECTION AND MAINTENANCE

- A. Furnish protection against weather. Cover building openings and penetrations to protect interior of building from weather.
- B. Maintain work, materials, apparatus and fixtures free from damage, accumulation of debris, and protected from dust and dirt.
- C. Protect items having factory finish to prevent damage to finish and equipment.
- D. At end of day's work, cover new work likely to be damaged or otherwise protect and necessary.
- E. After installation, secure substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations.
- F. Remove protection where no longer needed. Upon completion of Work, remove storage facilities from site.
- G. Contractor shall replace, at no additional cost to the Owner, stored items damaged by inadequate protection and environmental control.

- H. For mechanical and electrical equipment in long-term storage, provide manufacturer's service instructions shown on exterior of package.
- I. Service equipment on a regular basis as recommended by manufacturer. Maintain log of maintenance services; submit log as Project Record Document in accordance with requirements of Section 01781, Project Record Documents.
- J. After cabinets and boxes are installed, cover openings to prevent entrance of water and foreign materials. Close conduit openings with temporary metal or plastic cap, including those terminated in cabinets.
- K. Provide temporary enclosures for equipment such as substations and motor control centers. Provide and maintain heat in closures until equipment is energized, to avoid condensation damage.

1.13 MANUFACTURER CERTIFICATION

- A. Prior to Final Acceptance of Work, for items designated in Technical Specifications Sections, an authorized representative of each manufacturer of materials and/or equipment installed under the work of that Section, shall personally inspect installation and operation of his/her materials, system and equipment to determine they are correctly installed and operating properly as follows:
 - 1. Inspection and testing shall be accomplished:
 - a. For Work which will be concealed during execution of Work, after completion of installation and prior to concealment.
 - b. For Work which will not be concealed, at completion of Work.
 - 2. Each representative shall submit a signed statement to the Owner through the Contractor certifying to his personal inspection and to the correct installation and proper operation of materials, systems and/or equipment. Their certification shall list all items included.
 - 3. Contractor shall transmit all such certifications to the Owner at or prior to Final Acceptance Inspection. Transmittal shall include a list of all certifications included.

PART 2 - PRODUCTS

2.01 MATERIALS, EQUIPMENT & FURNISHINGS

- A. Materials and equipment intended for use in Project must be new. Equipment and furnishings utilized for installation of material and equipment in the Project may be new or used, but must be serviceable, must be adequate for intended purpose, and must not violate applicable codes and/or regulations.

PART 3 - EXECUTION

3.01 GENERAL

- A. Store products immediately upon delivery at location acceptable to the Owner, in accordance with manufacturer's storage instructions, with seals and labels intact. Protect until uninstalled.

- B. Arrange storage in manner to provide access for maintenance of stored items and for inspection.

3.02 MAINTENANCE OF STORAGE

- A. Verify that storage facilities comply with manufacturer's product storage requirements.
- B. Verify that manufacturer required environmental conditions are maintained continually.
- C. Verify that surfaces of products to elements are not adversely affected and that any weathering of finishes is within acceptable tolerances under requirements of Construction Contract Documents.

END OF SECTION 01610

SECTION 01620

STORAGE AND PROTECTION

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. General storage and protection of project materials and equipment.
- B. Furnish, install and maintain storage sheds as required for protection of materials and equipment. Remove at completion of Work.
- C. Exterior storage requirements for all specified materials and equipment requiring protection.

1.02 RELATED REQUIREMENTS

- A. Division 1, General Requirements in the Project Manual without exception..

PART 2 – PRODUCTS

2.01 MATERIALS, EQUIPMENT & FURNISHINGS

- A. Materials and equipment intended for use in Project must be new. Equipment and furnishings utilized for installation of material and equipment in the Project may be new or used, but must be serviceable, must be adequate for intended purpose, and must not violate codes or regulations.

PART 3 – EXECUTION

3.01 GENERAL

- A. Store products immediately upon delivery at location acceptable to the Owner, in accordance with manufacturer's storage instructions, with seals and labels intact. Protect until installed.
- B. Arrange storage in manner to provide access for maintenance of stored items and for inspection.

3.02 ENCLOSED STORAGE

- A. Store products subject to damage by elements in substantial weather tight enclosures or storage sheds of adequate dimensions.
- B. Maintain temperature and humidity within ranges stated in manufacturer's instruction.
- C. Provide humidity control and ventilation for sensitive products as required by manufacturer's instruction.
- D. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.

- E. Contractor shall replace, at no additional cost to the Owner, store items damaged by inadequate protection or environmental control.
- F. Provide substantial platforms, blocking, or skids to support fabricated products above ground; slope to provide drainage.
- G. For products subject to dislocation or deterioration from exposure to elements, cover with impervious sheet materials. Provide ventilation to prevent condensation below covering.
- H. Store loose, granular materials on clean, solid surfaces, or on rigid sheet materials, to prevent mixing with foreign matter.
- I. Provide surface drainage to prevent erosion and pounding of water.
- J. Prevent mixing of refuse or chemically injurious materials or liquids with stored material.
- K. Pipe and conduit stored outdoors shall have open ends sealed to prevent entrance of dirt, moisture, etc.

3.03 MAINTENACE OF STORAGE

- A. Periodically inspect stored products on a scheduled basis.
- B. Verify that storage facilities comply with manufacturer's product storage requirements.
- C. Verify that manufacturer required environmental conditions are maintained continually.
- D. Verify that surfaces of products exposed to elements are not adversely affected and that any weathering of finishes is within acceptable tolerances established by the applicable manufacturer.

3.04 MAINTENACE OF EQUIPMENT STORAGE

- A. For mechanical and electrical equipment in long-term storage, provide manufacturer's service instructions shown on exterior of package.
- B. Service equipment on a regular basis as recommended by manufacturer. Maintain log of maintenance services; submit log in accordance with requirements of Section 01781, Project Record Documents

3.05 PROTECTION OF INSTALLED EQUIPMENT

- A. After cabinets and boxes are installed, cover openings to prevent entrance of water and foreign materials. Close conduit openings with temporary metal or plastic cap, including those terminated in cabinets.
- B. Provide temporary enclosures for equipment such as substations and motor control centers. Provide and maintain heat in closures until equipment is energized, to avoid condensation damage.

END OF SECTION 01620

SECTION 01700

EXECUTION REQUIREMENTS

PART 1- GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor shall comply with and be responsible for all of the requirements of the Project Manual without exception.
- B. Contractor shall provide field engineering and general layout services required on the project as follows:
 - 1. Civil, structural or other professional engineering services specified, or required to execute construction methods consistent with the requirements of the Construction Contract Documents.
 - 2. Survey work required for execution of the total Work of the Project.
 - 3. Continuous horizontal and vertical control regarding layout and execution of Work of the Project.
 - 4. Coordinate field engineering services with the Owner.

1.02 RELATED REQUIRMENTS

- A. Division 1, General Requirements of the Project Manual without exception.
- B. The Technical Specifications, Sections 00100 through 01900, as may be applicable.

1.03 CONTROLS

- A. Contractor will establish primary controls, horizontal and vertical control points at various locations at the Site. These will be described and indicated on the Contractor's approved Drawings and will be coordinated in the field by the Contractor.
- B. Existing control points and property line markers will be shown on the Owner's survey drawings.

1.04 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. For Surveying, a qualified engineer or registered land surveyor, registered in the State of South Carolina and acceptable to the Owner.
- B. For engineering, a registered professional engineer of a discipline required for this Project licensed in the State of South Carolina and acceptable to the Owner.

1.05 SURVEY REFERENCE POINTS

- A. Existing horizontal and vertical control points for the Project are those designated on Owner's survey drawings or as determined from investigation of the existing conditions.

- B. Verify property, grades, lines, levels and dimensions indicated.
- C. Locate and protect control points prior to starting Site Work and preserve permanent reference points during construction.
 - 1. Make no changes or relocations without prior approval of the Owner
 - 2. Report to the Owner when a reference point is lost, destroyed or requires relocation because of necessary changes in grades or locations.
 - 3. Require surveyor to replace Project control points, which may be lost or destroyed.

1.06 PROJECT LAYOUT REQUIREMENTS

- A. Establish a sufficient number of permanent benchmarks on Site, as may be required, referenced to data established by survey control points. Record locations of benchmarks with horizontal and vertical data on Project Record Documents, Section 01781.
- B. From established control points, Contractor shall layout all Work by establishing all lines and grades at Site necessary to control Work, and shall be responsible for all measurements that may be required for execution of Work.
- C. Furnish, at own expense, all such stakes, steel pins, equipment, tools and material and labor that may be required in laying out Work control points.
- D. Establish lines and levels, locate and layout by instrumentation and similar appropriate means:
 - 1. Site Improvements
 - a. Stakes for grading, fill, and topsoil placement.
 - b. Utility slopes and invert elevations.
 - c. Limits of pavement (concrete and asphalt).
 - 2. Batter boards for structures.
 - 3. Building foundation column locations, piling and floor levels.
 - 4. Controlling lines and levels required for mechanical and electrical trades.
- E. Verify and coordinate in field all existing and proposed underground components including civil, structural, utilities and other components prior to initiation of the Work. Advise the Owner of any conflicts or discrepancies.

1.07 SUBMITTALS AND DOCUMENTS

- A. Submit name and address of Surveyor and Professional Engineer assigned to the Project to the Owner.
- B. On request of the Owner, submit documentation to certify accuracy of field engineering work and compliance with Construction Contract Documents.
- C. Submit certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance, or non-conformance, with Construction Contract Documents.
- D. Standards and Availability: Data and other measurements shall be recorded in accordance with standard and approved methods. All field notes, sketches, recordings, and

computation in establishing above horizontal and vertical control points shall be available at all times during progress of Work for ready examination by the Owner

- E. Maintain complete and accurate record data on underground utilities and obstructions, new and existing, encountered in execution of Work. Record data on Project Record Documents in accordance with requirements of Section 01781, Project Record Documents.
- F. On completion of all foundation walls, pavement and other major site improvements, prepare certified survey showing dimensions, locations, angles, and elevations of construction.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION 01700

SECTION 01710

FINAL CLEANING

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- C. Contractor shall comply with and be responsible for all requirements of the Project Manual, without exception.
- D. Contractor shall comply with applicable requirements in this Section and more specific requirements in Section 00800, Special Project Conditions, and Section 01100, Summary of Work.
- E. Execute final cleaning at completion of the Work as required by the Construction Contract Documents.

1.02 RELATED REQUIREMENTS

- A. Divisions 1, General Requirements in the Project Manual without exception.

1.03 DISPOSAL REQUIREMENTS

- A. Conduct cleaning and disposal operations to comply with all applicable codes, ordinances, regulations, and anti-pollution laws.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.
- C. Using cleaning materials only on surfaces recommended by cleaning material manufacturer.
- D. Refer to applicable manufacturer's recommendations for specific products and materials.

PART 3 – EXECUTION

3.01 FINAL CLEANING

- A. Execute prior to inspection at Substantial Completion.
- B. Employ skilled workmen or professional cleaners for the final cleaning.
- C. In preparation for substantial completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces, and clean as follows:

1. Remove grease, dust, dirt stain, labels, fingerprints, and other foreign materials from site-exposed interior and exterior surfaces; wash and polish surfaces so designated to shine finish.
 2. Repair, patch and touch-up marred surfaces to specified finish, to match adjacent surfaces.
- D. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- E. If applicable, clean roof areas of debris; flush roof drainage system(s) with water until clear.
- F. Prior to final completion, or Owner occupancy, Contractor and Owner shall conduct an inspection of sight-exposed interior and exterior surfaces, and all work areas, to verify that the entire Project Work area is clean.
- G. Leave Project Work area clean and ready for use and occupancy.

END OF SECTION 01710

SECTION 01731

CUTTING AND PATCHING

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Requirements and limitations of cutting and patching associated with the Work of this Contract.
- B. Cutting, fitting and patching, including attendant excavation and backfill required completing the Work of this Contract.
- C. Assume that concealed or previously unknown conditions may be encountered during the execution of the Work. No consideration whatsoever will be given to any claim for additional cost and/or time resulting from such conditions that can reasonably be expected, which are ordinarily encountered or which are generally recognized as inherent in the character of the Work anticipated for this Project.

1.02 RELATED REQUIREMENTS

- A. Division 1, General Requirements in the Project Manual without exception.
- B. The Technical Specifications, which may be applicable and incidental to the Work of the respective Sections.

1.03 DESCRIPTION AND SCOPE

- A. Execute cutting, fitting and patching, including attendant excavation and backfill required to complete the Work or to:
 - 1. Make all parts of the Work fit together.
 - 2. Uncover portions of the Work to provide for installation of ill-timed work.
 - 3. Remove and replace defective work, products and/or equipment.
 - 4. Remove and replace work not conforming to the requirements of the Construction Contract Documents, approved Drawings and Technical Specifications.
 - 5. Remove samples of installed work as specified for testing.
 - 6. Provide routine penetrations of non-structural surfaces for installation of mechanical, electrical and plumbing work.
 - 7. Uncover work that has been covered prior to a required observation by the Owner

1.04 SUBMITTALS

- A. The Contractor shall submit a written request to the Owner seventy two (72) hours in advance of any cutting or alteration work. The written request/notice shall state the location, date and time the work will be accomplished. The preceding will apply to instances that affects:
 - 1. Work of other Contractors engaged by the County on the site.
 - 2. The structural value or integrity of any element of the Work of the Project.
 - 3. The integrity or effectiveness of weather exposed or moisture resistant elements of, or systems within the Work of the Project.

4. Efficiency, operational life, maintenance and/or safety of the operational elements of, or systems within the Work of the Project.
 5. The visual and esthetic qualities of sight exposed elements of the Work of the Project.
- B. The Contractor's requests / notices shall include, at a minimum:
1. Owner RFP / Bid Number.
 2. Location and description of the affected work to be performed.
 3. The necessity for cutting, patching, alteration or excavation.
 4. Effect of the work on the Owner and / or its Contractors and abutting property.
 5. Effect of the work on the integrity of the structural and/or weatherproof elements of the Work of the Project.
 6. Description of the proposed work:
 - a. Scope of cutting, patching, alteration or excavation.
 - b. Contractor's prime or sub-contractors who will execute the work.
 - c. Products proposed to be used.
 - d. Extent of refinishing to be done.
 7. Alternatives to cutting, patching, alteration or excavation.
 8. Written permission of any affected entity other than the Contractor's prime and sub-contractors.
- C. Should the conditions and schedule of the work to be performed indicate a change of products from the original installation, the Contractor shall submit a written request to the Owner for substitution pursuant to the stipulations in Section 01600, Product Requirements.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Contractor shall comply with the final, approved Technical Specifications and standards for each specific product involved.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Contractor shall examine existing conditions in the area of the work, including any elements subject to damage or to movement during cutting, patching, alteration, or excavation.
- B. After uncovering the work, Contractor shall inspect the conditions affecting installation of products, or performance of the work.
- C. Contractor shall report unsatisfactory or questionable conditions to the Owner in writing. No work is to proceed until a written response is received from the Owner.
- D. Beginning of cutting, patching, alterations, or excavation operations shall be considered as acceptance, by the Contractor of the existing conditions.

3.02 PREPARATION AND PROTECTION

- A. Contractor shall provide adequate temporary support as necessary to assure structural value or integrity of the affected portion of the work.

- B. Contractor shall provide devices and methods to protect adjacent work and other portions of the Work of the Project from any damage.
- C. Contractor shall provide protection from the elements of weather for that portion(s) of the Work of the Project that may be exposed by cutting, patching, alteration, or excavation.
- D. Contractor shall maintain excavations free from water and comply with the requirements of state and local agencies having jurisdiction.

3.03 DUST CONTROL

- A. Contractor shall obtain approval of the means and method by which dust and debris will be controlled from the Owner.
- B. Contractor shall provide and maintain positive methods of dust control and apply dust control materials to minimize raising and spreading of dust from cutting, patching and alteration operations.
- C. Contractor shall conform to the requirements of Section 01510, Temporary Construction Controls.

3.04 PERFORMANCE

- A. Open flame torch cutting operations require a “Hot Work” permit in compliance with current state and local codes and regulations. Contractor shall exercise all fire and safety precautions as required.
- B. Contractor shall execute all cutting, patching, alteration, and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs or alterations.
- C. Contractor shall execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, tolerances, and finishes.
- D. Contractor shall cut, remove and legally dispose of selected mechanical equipment, components and materials as indicated, including but not limited to removal of mechanical piping, heating units, plumbing fixtures and trim, and other mechanical items made obsolete by the modified work.
- E. Contractor shall restore work that has been cut or removed, and shall install new products to provide completed work in accordance with the requirements of the Construction Contract Documents.
- F. Contractor shall fit work tight to pipes, sleeves, ducts, conduit, and other penetrations through vertical and/or horizontal surfaces. Where fire rated separations are penetrated, fill space around pipe or insert penetration with material having physical characteristics equivalent to fire resistant requirements of penetrated surfaces in accordance with state or local codes and acceptable construction practices.
- G. Contractor shall refinish entire surfaces as necessary to provide an even finish to match adjacent finishes:
 - 1. For continuous surfaces, refinish to nearest intersection.
 - 2. For an assembly, refinish entire unit.
- H. Contractor shall employ the Original Installer or Fabricator of Work performed under this Contract to execute cutting and patching for:
 - 1. Weather exposed or moisture resistant elements to maintain warranty and/or bonds.
 - 2. Sight exposed specialty finished surfaces.

END OF SECTION 01731

SECTION 01770

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor shall comply with and be responsible for all of the requirements of the Project Manual, without exception.
- B. The Contractor shall comply with applicable requirements in this Section and more specific requirements in Division 1, Section 01100, Summary of Work.
- C. The Contractor shall comply with the requirements stated in the Construction Contract and in approved and permitted Drawings and Technical Specifications for the Work.

1.02 RELATED REQUIREMENTS

- A. Conditions of the Construction Contract: fiscal provisions, legal submittals and additional administrative requirements.
- B. Division 1, General Requirements in the Project Manual without exception.
- C. Closeout submittals required of trades as may be indicated in various sections of the approved Technical Specifications.

1.03 DAMAGES

- A. If the Contractor neglects, fails, or refuses to complete the work by the Substantial Completion Date, Final Completion Date, or any portion of the Work by an Interim Completion Date, subject to any proper extension granted by the Owner, then the Contractor will pay, or cause the Contractor's Surety to pay damages to the Owner as defined in Summary of the Work, Section 01100.

1.04 PHASED COMPLETION

- A. In addition to Substantial Completion (Beneficial Occupancy) and Final Completion as defined below, the Contractor shall complete and make available to the Owner certain portions of the Work set forth on the Summary Schedule and Key Milestones in Section 00750 no later than the dates indicated on said Schedule ("Interim Completion Date")
- B. The Contractor acknowledges that such Interim Completion Dates are essential to the Owner's plans and use and, therefore, time is of the essence in meeting said Interim Completion Dates.

1.05 SUBSTANTIAL COMPLETION

- A. When Contractor considers the Work is substantially complete, he shall submit to the Owner the following:

1. A written certification that the Work, or designated portion thereof, is substantially complete. All items not complete shall be listed and deficient items noted.
 2. Owner will review the Contractor's certification and examine the Work for conformance to the Certification and the Construction Contract Documents.
 3. Owner will inform the Contractor of non-compliance or incomplete items.
 4. Contractor shall remedy the deficiencies in the Work within seventy-two (72) hours, and send a second written notice of substantial completion to the Owner.
 5. The Owner will re-examine the Work.
- B. When the Owner determines that the Work is substantially complete, the Owner will:
1. Prepare a Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected, as verified and amended.
 2. Send to Contractor for his/her written acceptance of the responsibilities assigned to them in the Certificate.
- C. After Work is substantially complete, Contractor shall:
1. Obtain and submit Certificate of Occupancy. Owner shall, in detail, list the status of the area affected by partial acceptance and occupancy to establish the existing conditions prior to such acceptance or occupancy.
 2. Complete Work listed for completion or correction within designated form.
 3. Perform all cleaning in accordance with Section 01710, Final Cleaning.

1.06 FINAL COMPLETION

- A. Within ten (10) calendar days after substantial completion, the Contractor shall submit to the Owner written certification that:
1. Construction Contract Documents have been reviewed.
 2. Work has been examined for compliance with Construction Contract Documents.
 3. Work has been completed in accordance with Construction Contract Documents.
 4. Equipment and systems have been tested in the presence of the Owner and the appropriate County personnel, and are operational.
 5. Work is completed and ready for final examination.
 6. Submittal of Closeout Documents as stipulated in paragraph 1.07 below.
- B. The Owner will make an examination to verify the status of completion within ten (10) calendar days after receipt of such certification.

- C. Should the Owner consider the Work incomplete or defective, or the Contractor has not demonstrated to the Owner that a “good faith” effort has been made within the time (72 hours) allotted in paragraph 1.05 A above, any Damages and/or Liquidated Damages, will be charged against the Contractor as defined and explained in Section 01100, Summary of Work
 - 1. The Owner will promptly notify the Contractor in writing of all deficiencies listing the incomplete or defective work.
 - 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written Certification to the Owner that the Work is complete.
 - 3. The Owner will re-examine the Work.
- D. When the Owner concludes that the Work is complete, the Owner shall determine the number of days for which Liquidated Damages will be assessed and request the Contractor to prepare closeout submittals.
- E. Acceptance of the entire project shall commence after all contract work is complete, final inspections are made, corrective actions completed, the Work re-examined, and after final acceptance by the Owner
- F. The date established by the Owner as the Final Completion Date shall initiate the guarantee and the warranty periods for all system components and the construction of the Project. The Project shall not be considered Final Complete until all Close Out Documents are properly completed and transmitted to the Owner.
- G. The Owner shall review the status of the Work and compare it to the request for final payment and compare it with the Project records for conformance to the final settlement requirements.
- H. The Owner shall receive from the Contractor, and maintain, the permit drawings and specification package, copy of all shop drawings and submittals, the “as-built” set of drawings and specifications, maintenance manuals as required by the contract and submitted by the Contractor. In addition, the Contractor shall provide spare parts and supplies, stored materials, special tools, filters, and other pertinent items as required under the Construction Contract Documents to the Owner for transmittal to the appropriate County department(s)

1.07 CLOSEOUT SUBMITTALS

- A. Evidence of compliance with requirements of governing authorities:
 - 1. Certificate of Occupancy
 - 2. Certificates of Inspection
- B. Project Record (Permit) Documents, in accordance with Section 01781
- C. Operating and Maintenance Data, in accordance with Section 01782
- D. Warranties and Bonds, in accordance with Section 01790.
- E. Spare Parts and Maintenance Materials, in accordance with Section 01785.

1. Provide products, spare parts, and maintenance materials in quantities specified in each approved Specification Section in addition to that required for completion of Work.

F. Certificate of Insurance for Products and Completed Operations.

1.08 EVIDENCE OF PAYMENTS AND RELEASE OF LIENS

A. Contractor's Affidavit of Release of Liens.

1. Consent of Surety to Final Payment. Use form acceptable to the Owner
2. Contractor's Release or Waiver of Liens. Standard Form "Affidavit and Partial Lien Waiver". Use form acceptable to Owner.
3. Separate releases of waivers of liens from prime and subcontractors, suppliers and others with lien rights against property of the Owner together with a list of those parties, in accordance with Standard Form "Affidavit and Final Lien Waiver". Use form acceptable to Owner.

B. All submittals shall be duly executed and notarized before delivery to the Owner.

1.09 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final Statement of Accounting to the Owner.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.
2. Additions and deductions resulting from:
 - a. Previous Change Orders.
 - b. Allowances.
 - c. Unit Prices.
 - d. Deductions for uncorrected Work.
 - e. Deductions for liquidated damages.
 - f. Other adjustments.
3. Total Contract Sum, as adjusted.
4. Previous payments.
5. Sum remaining due.

C. The Owner will prepare a final Change Order reflecting approved adjustments to the Contract Sum, which was not previously made by Change Orders.

1.10 FINAL APPLICATION FOR PAYMENT

A. Contractor shall submit final Application for Payment in accordance with procedures and requirements stated in the Construction Contract and Section 01290, Payment Procedures of the Project Manual.

1.11 ADDITIONAL ADJUSTMENT

- A. No adjustments to the Construction Contract requested by the Contractor will be allowed if asserted after execution of Final Payment of Contract.

1.12 POST-CONSTRUCTION INSPECTION

- A. Prior to expiration of one (1) year from the Date of Final Completion, the Owner, or its designated representative, will make visual inspection of the Project Work in the company of the Contractor to determine whether further correction of Work is required in accordance with the provisions of the Construction Contract. The Contractor shall be responsible for contacting the Owner and scheduling and coordinating the one (1) year inspection.
- B. The Owner will notify the Contractor, in writing, of any observed deficiencies.
- C. Contractor shall contact the Owner to arrange convenient time and establish schedule for correction of deficiencies.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION 01770

SECTION 01781

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 REQUIRED INCLUDED

- A. Contractor shall comply with and be responsible for all requirements of the Project Manual without exception.
- B. Contractor shall comply with the applicable requirements in this Section and more specific requirements in: Section 00800, Special Project Conditions; Section 01100, Summary of Work; Section 01330, Submittal Procedures; Section 01322, Photographic Documentation; and Section 01770, Close Out Procedures.
- C. Contractor shall conform to the requirements of the Owner, Georgetown County, and such other federal, state and municipal agencies having jurisdiction.

1.02 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents, in the Project Manual without exception.
- B. Division 1, General Requirements in the Project Manual without exception.

1.03 MAINTENACE OF DOCUMENTS AND SAMPLES

- A. For duration of Project, maintain at job Site the following:
 - 1. One copy of the Drawings, Technical Specifications, Addenda, shop drawings, products data, miscellaneous requested submittal data, Change Orders and other modifications to Contract, field orders, field test or written instructions.
 - 2. One copy of transmittal letters.
 - 3. One set of construction photographs.
 - 4. One set of samples.
 - 5. One copy of Permit Drawings as may be required by the appropriate governing agency having jurisdiction.
- B. Store documents and samples in Contractor's field office apart from documents used for construction.
 - 1. Provide files and racks for storage of documents.
 - 2. Provide locked cabinets or secure storage space for storage of samples.
- C. File documents and samples in accordance with CSI 16-division format.
- D. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- E. Make documents and samples available at all times for inspection by the Owner.

- F. Incomplete or out of order documents and samples will be grounds for not approving the Design/Builder's Application for Payment.
- G. Provide felt tip marking pens for recording information in color code designated by the Owner.
- H. Label each document "PROJECT RECORD" in neat large printed letters. Keep record documents current. Record information concurrently with construction progress. Do not conceal any work until required information is recorded.

1.04 RECORD DRAWINGS

- A. Electronic data "As-Built" record drawings shall be required. The Owner will select electronic format and software to be used by Contractor.
- B. Permanent and Accurate Record Drawings shall be created on full size sheets (24 in. x 36 in. ft.) capable of being reproduced. These shall be made from the approved, original drawings, which shall be provided to a commercial reprographics service at an appropriate time. All of the aforementioned shall be at the Contractor's sole cost and expense.
- C. Legibly mark in color code designated by the Owner to record actual construction on designated Record Drawing prints:
 1. Depths of various elements of structure(s) foundations in relation to finish first floor datum.
 2. Horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements.
 3. Location of all internal utilities and appurtenances and features of the structure(s), including dimensional locations of underground activities and other work
 4. Dimensional locations, vertical and horizontal, of site work, including utilities.
 5. Dimensional location, vertical and horizontal, of asphalt and concrete pavement.
 6. Dimensional location, vertical and horizontal, of storm water drainage system including pipe invert elevations.
- D. Indicate the following installed conditions:
 1. All electrical systems, plumbing and mechanical systems and such other units installed requiring periodic maintenance or repair.
 2. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
 3. Approved substitutions, contract modifications, and actual equipment and materials installed.
 4. Field modifications with dimensions and details.
 5. Modifications made by addenda, clarifications, Field Orders or Change Orders.
 6. Details not on original, approved Construction Contract drawings.
 7. Record information on a daily basis, or as often as necessary.
 8. Include references to related shop drawings and modifications.
- E. Contractor shall retain competent drafting services, as necessary, for transfer of "mark-up notations" from information recorded during construction.

- F. Contractor shall submit Record Documents drawings to the Owner for review and acceptance thirty (30) days prior to final closeout.
- G. Make revisions and additions as may be indicated by the Owner.
- H. Do not use these Drawings for reference or construction, nor allow them to leave the field office.

1.05 RECORD SPECIFICATIONS AND ADDENDA

- A. Legibly mark up in color code designated by the Owner each Specification Section to record the following:
 - 1. Manufacturer, trade name, catalog name and supplier (with address and phone number) of each product and item of equipment actually installed.
 - 2. Modifications made by Change Order.
 - 3. Other matters not originally specified.

1.06 RECORD SAMPLES

- A. Record in transmittal, if not indicated, manufacturer, trade name, catalog number.

1.07 SUBMITALLS

- A. At Contract closeout, Contractor shall sign each final Record Drawing and cover of Record Specifications stating documents are complete and accurate, deliver project Record Documents to the Owner.
- B. Accompany submittal with transmittal letter in duplicate, containing:
 - 1. Date.
 - 2. Owner RFP / Bid Number.
 - 3. Contractor's name and address.
 - 4. Title and number of each Record Document.
 - 5. Signature of Contractor or his/her authorized representative.
- C. Submit the following quantities of Record Documents:
 - 1. Two (2) complete and full sets of Project Record Drawings.
 - 2. Two (2) complete sets of "Up-Dated" Technical Specifications.
 - 2. A complete set of Project Record Drawings in electronic format to be determined by Owner.

1.08 BURDEN OF ACCURACY

- A. Contractor shall bear all costs of damages of any nature incurred by the Owner due to inaccuracies or incompleteness of the submitted Project Record Documents.

END OF SECTION 01781

SECTION 01790

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

- A. Division 0, Bidding and Contract Documents of the Project Manual without exception.
- B. Division 1, General Requirements of the Project Manual without exception.
- C. Approved Technical Specifications, as applicable and required.

1.02 SUMMARY

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Construction Contract Documents, including manufacturer's standard warranties on products and special warranties.
 - 1. Refer to the applicable requirements of Division 0 and Division 1 for Contractor's special warranty of workmanship and materials.
 - 2. General closeout requirements are included in Section 01770, Closeout Procedures.
 - 3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted, are included in the individual and applicable Sections of the Technical Specifications.
 - 4. Certifications and other commitments and agreements for continuing services to the Owner, Georgetown County, South Carolina are specified elsewhere in the Construction Contract Documents.
- B. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products.

1.03 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Construction Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.

- E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Construction Contract Documents.
- F. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to counter sign such commitments are willing to do so.

1.04 SUBMITTALS

- A Submit written warranties to the Owner prior to the date certified for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.
- B When a designated portion of the Work is completed and occupied or used by the Owner by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within ten (10) calendar days of completion of that designated portion of the Work.
- C When a special warranty is required to be executed by the Contractor, or the prime and a subcontractor, supplier or manufacturer prepare a written document that contains appropriate terms and identification, ready for execution by the required parties, Contractor shall submit a draft to the Owner for approval prior to final execution.
- D Form of Submittal: At Final Completion, the Contractor shall compile two (2) copies of each required warranty and bond properly executed by the Contractor, or by the prime, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- E Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2" by 11" paper.
- F Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer.
- G Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS, the Project title or name and location, Owner RFP / Bid number and the name of the Contractor.
- H When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

END OF SECTION 01790

END OF PROJECT MANUAL, VOLUME 1

PROJECT MANUAL – VOLUME II

BECK RECREATION CENTER MULTI-PURPOSE FIELDS & FACILITIES

STANTEC PROJECT NO. 178420882

BID #19-032

STANTEC CONSULTING SERVICES, INC.

4969 Centre Pointe Drive, Suite 200, North Charleston, South Carolina 29418

PHONE: 843-470-7700 | WEBSITE: Stantec.com

CONSULTANTS:

SITE ELECTRICAL

Charleston Engineering
125 B Wappoo Creek Drive
Charleston, SC 29412
(843) 762-4242

APRIL 26, 2019

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See SECTION 00900 (Volume 1, page 61) for the List of Drawings and Technical Specifications incorporated herein by reference as if attached in full. These are available for download at no charge on the Georgetown County, SC website at www.georgetowncountysc.org select “purchasing” and “current bids”.

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SECTION 023000-GEOTECHNICAL ENGINEERING REPORT

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This section includes subsurface data logs for information only.

1.2 SOIL INVESTIGATION DATA

- A. Subsurface data logs are available for information only. Actual conditions may vary. If bidders are not satisfied with accuracy and completeness of all available data, they are at liberty to make borings or perform soil investigation work for their own use at its expense. If Contractor chooses to perform their own investigation, work shall be coordinated with the Engineer. Any results from Contractor's investigation shall be shared promptly with the Engineer. Owner reserves the right to share Contractor's investigation data with other potential bidders if information could affect bidding process.
- B. The boring logs and test results are for information of the Contractor. Owner and Engineer assume no responsibility for the information.

PART 2 – PRODUCTS

See attached report.

PART 3 – EXECUTION

None this Section.

END OF SECTION

SECTION 024113 – SELECTIVE SITE DEMOLITION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Extent of selective demolition work is indicated on drawings.

1.3 SUBMITTALS

- A. Schedule: Submit schedule indicating proposed methods and sequence of operations for selective demolition work to Owner's representative for review prior to commencement of work. Included coordination for shut-off, capping, and continuation of utility services as required, together with details for dust and noise control protection. Include schedule and location for return of items identified on plans to be delivered to owner of property.

1.4 JOB CONDITIONS

- A. Condition of Structures: Owner assumes no responsibility for actual condition of items to be demolished.

- B. Partial Demolition and Removal: Items indicated to be removed but of value to Contractor may be removed as work progresses. Transport salvaged items from site as they are removed.

Storage or sale of removed items on site will not be permitted.

- C. Protections: Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to selective demolition work.

Protect from damage existing finish work to remain in place and becomes exposed during demolition operations. Remove protections at completion of work.

1.5 DAMAGES

- A. Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

1.6 TRAFFIC

- A. Conduct selective demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.

Do not close, block or otherwise obstruct streets, walks, or other occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways.

1.7 EXPLOSIVES

- A. Use of explosives will not be permitted.

1.8 UTILITY SERVICES

- A. Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.

Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to governing authorities.

1.9 ENVIRONMENTAL CONTROLS

- A. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

Do not use water when it may create hazardous or objectionable conditions such as ice, flooding, and pollution.

PART 2 – PRODUCTS

None in this section

PART 3 – EXECUTION

3.1 PREPARATION

- A. Prior to commencement of selective demolition work, check areas in which work will be performed. Photograph or video existing conditions or surfaces, equipment, or surrounding properties that could be misconstrued as damage resulting from selective demolition work. File with Owner's representative prior to starting work.
- B. Cover and protect equipment and fixtures to remain from soiling or damage when demolition work is performed in areas from which such items have not been removed.

3.2 DEMOLITION

- A. Perform selective demolition work in a systematic manner. Use such methods as required complete work indicated on drawings in accordance with demolition schedule and governing regulations.
Demolish concrete in small sections. Cut concrete at junctures with construction to remain using power-driven masonry saw or hand tools. Do not use power-driven impact tools

Completely fill below-grade areas and voids resulting from demolition work. Provide fill consisting of approved earth, gravel and sand, free of trash and debris, stones over 2" diameter, roots or other organic matter.

If unanticipated mechanical, electrical, or structural elements, which conflict with intended function or design, are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's representative in written, accurate detail. Pending receipt of directive from Owner's representative, rearrange selective demolition schedule as necessary to continue overall job progress without delay.

3.3 SALVAGE MATERIALS

Any articles of historic significance will remain the property of the Owner. Notify Owner's representative if such items are encountered and obtain acceptance regarding method of removal and salvage for Owner.

3.4 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove debris, rubbish and other materials resulting from demolition operations from site. Transport and legally dispose of materials off site. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution. Burning of removed materials is not permitted on project site.

3.5 CLEAN-UP AND REPAIR

- A. Upon completion of demolition work, remove tools, equipment and demolished materials from site. Remove protections and leave site clean. Repair demolition performed in excess of required work. Return structures and surfaces to remain to the condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work. Fill in all voids created by selective demolition and grade site to drain. Grass all disturbed areas for erosion control.

END OF SECTION

SECTION 030000 – SITE CONCRETE

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Concrete sidewalks and curbs

1.2 RELATED SECTIONS

- A. Section 31 00 00 – Earthwork: Preparation of site for paving and base.

1.3 REFERENCES (LAST REVISION)

- A. ACI 117 – Specifications for Tolerances for Concrete Construction and Materials.
- B. ACI 301 – Specifications for Structural Concrete.
- C. ACI 304R – Guide for Measuring, Mixing, Transporting and Placing Concrete.
- D. ACI 318 – Building–Code Requirements for Structural Concrete and Commentary.
- E. ACI 330R – Guide for the Design and Construction of Concrete Parking Lots.
- F. ASTM A 185 – Steel Welded Wire Reinforcement, Plain, for Concrete.
- G. ASTM A 497 – Steel Welded Wire Reinforcement, Deformed, for Concrete.
- H. ASTM A 615 – Deformed and Plain Carbon–Steel Bars for Concrete Reinforcement.
- I. ASTM C 31 – Making and Curing Concrete Test Specimens in the Field.
- J. ASTM C 33 – Concrete Aggregates.
- K. ASTM C 39 – Compressive Strength of Cylindrical Concrete Specimens.
- L. ASTM C 94 – Ready–Mixed Concrete.
- M. ASTM C 150 – Portland Cement.
- N. ASTM C 172 – Sampling Freshly Mixed Concrete.
- O. ASTM C 260 – Air–Entraining Admixtures for Concrete.
- P. ASTM C 309 – Liquid Membrane–Forming Compounds for Curing Concrete.

- Q. ASTM C 494 – Chemical Admixtures for Concrete.
- R. ASTM C 920 – Elastomeric Joint Sealants.
- S. ASTM E 1155 – Test Method for Determining FF Floor Flatness and FL Floor Levelness
- T. ASTM C 1116 – Fiber–Reinforced Concrete.
- U. ASTM D 1751 – Preformed Expansion Joint Filler for Concrete Paving and Structural Construction. (Nonextruding and Resilient Bituminous Type).
- V. ASTM D 3740 – Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- W. ASTM E 329 – Agencies Engaged in Construction Inspection and/or Testing.

1.4 PERFORMANCE REQUIREMENTS

- A. Paving: Designed for movement of trucks up to 60,000lbs.

1.5 SUBMITTALS FOR REVIEW

- A. Section 01 33 00 – Submittals Procedures.
- B. Product Data: Provide data on joint filler, admixtures, and curing compounds.
- C. Concrete Design Mix.

1.6 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301, ACI 318, and ACI 330R.
- B. Obtain cementitious materials from same source throughout.
- C. Conform to ACI 117 – Specifications for Tolerances for Concrete Construction and Materials.
- D. Method of measurement or accessible route with a 24" digital smart–level will be used to measure points along the accessible route. Line of measurement shall be parallel to the long edge of ramp or accessible route, whether straight or curved. Longitudinal measurement lines shall be spaced 3 feet apart, but in no case shall fewer than two lines be used. The horizontal measurement cross–slope will be measured every 6 feet. Engineer reserves the right to gather additional measurements if further investigation is necessary. The 24" Smart–level slope

readings greater than specified tolerance within contract documents will be identified as non-compliant and not accepted.

- E. Engineer reserves the right to mark and reject portions of concrete not within tolerance as specified.

1.7 REGULATORY REQUIREMENTS

- A. Conform to SCDOT standards for paving work on public property.

1.8 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

1.9 GUARANTEE

- A. Contractor shall guarantee the quality of materials and workmanship for a period of 12 months after acceptance. Defects discovered during this period shall be repaired by Contractor at no cost to the Owner.

1.10 TESTING

- A. Testing laboratory shall operate in accordance with ASTM D 3740 and E 329 and be acceptable to the Engineer.
- B. Testing laboratory and Project Engineer/Project Representative shall be given a minimum of 48 hours notice prior to taking any tests.
- C. Owner shall select and engage the testing laboratory. Testing laboratory shall be responsible to the Owner and Owner's Engineer. Payment for laboratory and all tests shall be by Owner, except Owner specifically reserves the right to deduct from Contractor's payment, expense, and charges of testing laboratory when:
 1. Contractor gives notice work is ready for inspection and testing, and fails to be ready for the test, and/or
 2. Testing of the Contractor's work, products, or materials fail, and retesting is required, and/or
 3. Contractor abuses services or interferes with the work of testing laboratory in conduct of this work.
- D. Test results shall be furnished to the Engineer prior to continuing with associated or subsequent work.

PART 2 – PRODUCTS

2.1 FROM MATERIALS

- A. Wood or steel form material, profiled to suit conditions.
- B. Joint Filler: ASTM D1751 type; 1/2 inch thick.

2.2 REINFORCEMENT

- A. Reinforcing Steel: ASTM A 615, Grade 60 billet steel deformed bars; uncoated finish.
- B. Welded Steel Wire Fabric: Plain type, ASTM A 185; uncoated finish.
- C. Fiber reinforcement: Shall conform to ASTM C 1116 as manufactured by Fibermesh Company or equivalent. Concrete mix design shall utilize between 0.5% and 1.0% fiber content.

2.3 CONCRETE MATERIALS

- A. Cement: ASTM C 150, Type I – Normal.
- B. Fine and Coarse Mix Aggregates: ASTM C 33. Coarse aggregate shall consist of granite stone.
- C. Water: Potable, not detrimental to concrete.
- D. Air Entrainment: ASTM C 260.
- E. Chemical Admixture: ASTM C 494, Type A – Water Reducing.

2.4 ACCESSORIES

- A. Curing Compound: ASTM C309, clear with fugitive dye.
- B. Sealant: Joints shall be sealed per detail on project drawings, conforming to ASTM C 920, Type S or M, Grade P or NS, Class 25.

2.5 CONCRETE MIX – BY PERFORMANCE CRITERIA

- A. Provide concrete to the following criteria:
 - 1. Flexible Strength: 700 psi.
 - 2. Compressive Strength: 3,000 psi @ 28 days.
 - 3. Slump: 4 to 5 inches.
- B. Use accelerating admixtures in cold weather only when acceptable to Engineer. Use of admixtures will not relax cold weather placement requirements.
- C. Use calcium chloride only when accepted by Engineer.

- D. Use set retarding admixtures during hot weather only when accepted by Engineer.

2.6 SOURCE QUALITY CONTROL AND TESTS

- A. All sampling and testing services shall be performed, at Owner's expense, by a testing agency operating in accordance to ASTM D 3740 and E 329 latest edition and acceptable to the Engineer.
- B. Contractor shall submit to the Engineer a design mix on each class of concrete proposed for use. The mix shall be prepared by an acceptable testing laboratory. Compressive strength of at least four specimens of the design mix shall indicate 15% higher than 28 days strengths specified. During the work, Contractor shall make three test cylinders for each 50 cubic yards, or fraction thereof, of concrete placed each day. One cylinder shall be tested at 7 days and the other two at 28 days in accordance with ASTM C 39. Copies of all test reports shall be furnished to the Engineer.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify subgrade conditions under provisions of Section 31 00 00 – Earthwork.
- B. Verify compacted subgrade is acceptable and ready to support concrete and imposed loads.
- C. Verify slopes and elevations of subgrade are correct.

3.2 CONSTRUCTION OBSERVATION

- A. Engineer or Project Representative will have the right to require any portion of work be completed in their presence and if work is covered up after such instruction, it shall be exposed by Contractor for observation. However, if Contractor notifies the Engineer such work is scheduled, and Engineer fails to appear within 48 hours, Contractor may proceed. All work completed and materials furnished shall be subject to review by the Engineer or Project Representative. Improper work shall be reconstructed. All materials, which do not conform to requirements of specifications, shall be removed from the work upon notice being received from Engineer for rejection of such materials. Engineer shall have the right to mark rejected materials to distinguish them as such.

3.3 SUBGRADE

- A. Prepare subgrade in accordance with Section 31 00 00 – Earthwork.

3.4 PREPERATION FOR PLACING

- A. Water shall be removed from excavations before concrete is deposited. Hardened concrete debris and other foreign materials shall be removed from the interior of forms and inside of mixing and conveying equipment. The reinforcement shall be made secure in position and shall be subject to examination and acceptance.
- B. Moisten subgrade to minimize absorption of water from fresh concrete.
- C. Coat surfaces of manhole, inlet, and catch basin frames with oil to prevent bond with concrete pavement.
- D. Notify Engineer minimum 48 hours prior to commencement of concreting operations

3.5 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler in position, in straight lines. Secure to formwork during concrete placement.
- D. Forms shall be constructed to the shape, line, and grade required and shall be maintained sufficiently rigid to prevent deformation under load. Form work and details of construction joints shall conform to ACI-318, Chapter 6.

3.6 REINFORCEMENT

- A. Place reinforcement as indicated.
- B. Interrupt reinforcement at expansion joints.

3.7 PLACING CONCRETE

- A. Placing of concrete shall conform to Chapter 5 of the American Concrete Institute Standard A.C.I. 318. Concrete having attained initial set or having contained water for more than 45 minutes shall not be used in the work. Concrete shall not be dropped freely more than 5 feet. Concrete shall be mixed and placed only when the temperature is at least 40 degrees F and rising. Concrete shall be placed only upon surfaces free from frost, ice, mud and other detrimental substances or conditions. When placed on dry soil or pervious material, water proof paper or polyethylene sheeting shall be laid over surfaces to receive the concrete.

- B. Ensure reinforcement, inserts, embedded parts, formed joints and forms are not disturbed during concrete placement.
- C. Place concrete continuously over the full width of panel and between predetermined construction joints. Do not break or interrupt successive pours so cold joints will not occur.
- D. Place concrete to elevations indicated on the contract drawings.

3.8 JOINTS

- A. Place expansion joints at 50 foot intervals and radius points.
- B. Place contraction joints at 10 foot intervals. Align curb, gutter, and sidewalk joints.
- C. Place joint filler between paving components and building or other appurtenances. Recess top of filler 1/8 inch.
- D. Saw cut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

3.9 FINISHING

- A. Curbs and Gutters: Light broom parallel to gutter.
- B. Inclined Vehicular Ramps: Broomed perpendicular to slope.
- C. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.
- D. Accessible Routes: Surfaces shall be stable, firm, and slip resistant. Slab Finish Tolerances – Unless otherwise called out in the contract documents, finishes shall be true planes within 3/16 inch in 10 feet as determined by a 10-foot straightedge placed anywhere on the slab in any direction. Maximum variation in elevation for a level slab shall not exceed quarter of an inch (1/4") over the entire slab.
- E. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

3.10 JOINT SEALING

- A. Separate pavement from vertical surfaces with 1/2 inch thick joint filler.
- B. Place joint filler in pavement pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- C. Extend joint filler from bottom of pavement to within 1/8 inch of finished surface.

3.11 TOLERANCES

- A. Section 01 45 00 – Quality Control.
- B. General Site Concrete:
 1. Maximum Variation of Surface Flatness: 1/4 inch in 10 feet.
 2. Maximum Variation From True Position: 1/4 inch.
- C. Accessible Routes: Variation from design elevation shall not exceed 1/4 inch; however, accessible routes shall not exceed maximum ADA allowable slopes. Contractor shall remove and replace any and all portions of the accessible route exceeding maximum ADA allowable slopes.

3.12 CURB AND GUTTER SECTIONS

- A. Shall be constructed as shown on the drawings and in accordance with applicable details. Subgrade below the curb and gutter sections shall be compacted to 98% density. Curb and gutter sections shall be constructed in sections of uniform length and shall not exceed 10 feet or be less than 5 feet in length. Straight edging along the edge of gutter and top of curb shall conform to those requirements for adjacent pavement but with no irregularities to exceed 1/4 inch in 10 feet.
- B. If slip –form or extruded construction is used, contraction joints shall be located at intervals no greater than 10 feet by sawing hardened concrete at the proper time. Joints shall be sawed between 4 to 8 hours after placing of concrete. Depth of saw–cut shall be one–fourth thickness of the curb and gutter section. The maximum width of cut shall be 1/4 inch. All joints shall be sawed in succession.

- C. Half inch thick premolded expansion joints shall be installed completely through the joints at spaces not to exceed 50 feet and at all structures and walks.
- D. When curb forms are removed, backfill shall be immediately placed, tamped, and graded behind the new curb to help protect line and grade. Machine methods of placing and forming may be used provided finished product is satisfactory to the Engineer.
- E. Contractor shall place a concrete depressed curb at all driveways shown on the drawings or where a driveway is in use.
- F. Cracked curb and gutter will not be accepted.

3.13 CONCRETE CURING

- A. Immediately after placement and finishing, concrete shall be protected from moisture loss for not less than 7 days. For surfaces not in contact with forms, curing compound shall be uniformly applied after water sheen disappears from the concrete. Formed surfaces shall receive an application of curing compound if forms are removed during the 7 day curing period. Curing compound shall not be applied during rainfall.
- B. Curing compound shall be applied under pressure at the rate of 1 gallon per 150 square feet by mechanical sprayers. The spraying equipment shall be of the fully atomizing type. At time of use, curing compound shall be thoroughly mixed with a fugitive dye uniformly dispersed throughout the sprayer. Care shall be taken to prevent application to joints where concrete bond is required, to reinforcement steel and to joints where joint sealer is to be placed. The compound shall form a uniform continuous coherent film which will not crack or peel and shall be free from pinholes and other imperfections. Concrete surfaces subjected to heavy rainfall within 3 hours after curing compound has been applied shall be resprayed by above method and at above coverage at no additional expense to the Owner.
- C. No pedestrian or vehicular traffic shall be allowed over the surface for seven days unless surface is protected by planks, plywood, or sand. Protection shall not be placed until at least 12 hours after application of the curing compound.
- D. Protect concrete by suitable methods to prevent damage by mechanical injury or excessively hot or cold temperatures.

3.14 FIELD QUALITY CONTROL

- A. Field quality control tests specified herein will be conducted by the Owner's Independent Testing Laboratory at no cost to Contractor in accordance with

Section 01 45 23. Contractor shall perform additional testing as considered necessary by the Contractor for assurance of quality control. Retesting required as a result of failed initial tests shall be at the Contractor's expense

- B. Field testing, frequency, and methods may vary as determined by and between the Owner and Owner's Testing Laboratory.
- C. Review the Contractor's proposal materials and mix design for conformance with specifications.
- D. Perform testing in accordance with ACI 301 and testing standards listed herein.
- E. Strength Tests
 - 1. Secure composite samples in accordance with ASTM C 172. Sample at regularly spaced intervals from middle portion of the batch. Sampling time shall not exceed 15 minutes.
 - 2. Mold and cure specimens in accordance with ASTM C31.
 - a. A minimum of four concrete test cylinders shall be taken for every 50 cubic yards or less of each class of concrete placed each day and not less than once for each 5,000 square feet of paved area.
 - b. During initial 24 hours (plus or minus 8 hours) after molding, the temperature immediately adjacent to specimens shall be maintained in a range of 60 to 80 degrees F. Control loss of moisture from specimens by shielding from direct rays of the sun and from radiant heating devices.
 - c. Specimens transported prior to 48 hours after molding shall not be demolded, but shall continue initial curing at 60 – 80 degrees F until time for testing.
 - d. Specimens transported after 48 hours age shall be demolded in 24 hours (plus or minus 8 hours). Curing shall then be continued but in saturated limewater at 73.4 degrees (plus or minus 3 degrees F) until the time of testing.
 - e. Wet cure cylinders under controlled temperature until testing.
 - 3. Test cylinders in accordance with ASTM C 39.
 - a. Date test cylinders and number consecutively. Give each cylinder of each set an identifying letter (i.e. A, B, C, and D). Prepare a sketch of the building plan for each test set identifying location of placed concrete.
 - b. Test on cylinder (A) at 7 days for information. If compressive strength of concrete sample is equal to or above the 28 day specified strength, test

another cylinder (B) at 7 days. The average of breaks shall constitute compressive strength of concrete sample.

- c. Test two cylinders (B and C) at 28 days and the average of breaks shall constitute compressive strength of concrete sample.
- d. Retain fourth cylinder (D) for further testing if needed, but do not retain cylinder more than 60 days.

4. Evaluation and Acceptance

- a. Strength level of concrete will be considered satisfactory if the average of all sets of three consecutive strength tests equal or exceed specified strength and no individual strength test (average of two cylinders) results are below specified compressive strength test by more than 500 psi.
- b. Completed concrete work will not be accepted unless requirements of ACI 301, have been met, including dimensional tolerances, appearance, and strength of structure.

3.15 PROTECTION

- A. Immediately after placement, protect pavement from premature moisture loss, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit vehicular traffic over pavement or curb for seven days minimum after finishing. Do not permit pedestrian traffic over concrete for three days.

END OF SECTION

SECTION 310000 – EARTHWORK

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Grading
- B. Excavation
- C. Backfilling
- D. Compaction
- E. Remove and Replace Topsoil
- F. Water Control
- G. Testing

1.2 RELATED SECTIONS

- A. Section 01 45 00 – Quality Control
- B. Section 01 45 23 – Testing and Inspecting Services

1.3 REFERENCES (LATEST REVISION)

- A. ASTM D 448 – Sizes of Aggregate for Road and Bridge Construction.
- B. ASTM D 1557 – Laboratory Compaction Characteristics of Soil Using Modified Effort.
- C. ASTM D 2487 – Classification of Soils for Engineering Purposes (Unified Soil Classification System).
- D. ASTM D 6938 – In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- E. ASTM D 3740 – Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- F. ASTM E 329 – Agencies Engaged in Construction Inspection and/or Testing.

1.4 SUBMITTALS

- A. Section 01 33 00 – Submittal Procedures: Procedures for submittals.
- B. Materials Source: Submit gradation analysis, proctor results, and soil classification for all borrow material.

1.5 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. Comply with requirements of governmental agencies having jurisdiction.
- C. A testing laboratory retained by the Owner will make such tests as are deemed advisable. The Contractor shall schedule his work so as to permit a reasonable time for testing before placing succeeding lifts of fill material and shall keep the laboratory informed of his progress. The cost of the initial tests shall be paid for by the Owner. Subsequent tests required as a result of improper compaction shall be paid for by the Contractor.

1.6 TESTING

- A. Laboratory tests for moisture density relationship for fill materials shall be in accordance with ASTM D 1557, (Modified Proctor).
- B. In place density tests in accordance with ASTM D 6938.
- C. Testing laboratory shall operate in accordance with ASTM D 3740 and E 329 and be acceptable to the Engineer.
- D. The testing laboratory and Project Engineer/Project Representative shall be given a minimum of 48 hours notice prior to taking any of the tests.
- E. Owner shall select and engage the testing laboratory. Testing laboratory shall be responsible to the Owner and Owner's Engineer. Payment for laboratory and all tests shall be by the Owner, except Owner specifically reserves the right to deduct from Contractor's payment, expenses and charges of testing laboratory when:
 - 1. Contractor gives notice the work is ready for inspection and testing, and fails to be ready for the test, and/or
 - 2. Testing of the Contractor's work, products or materials fail, and retesting is required, and/or
 - 3. Contractor abuses the services or interferes with the work of the testing laboratory in the conduct of this work.

- F. Test results shall be furnished to the Engineer prior to continuing with associated or subsequent work.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Borrow shall consist of sand or sand–clay soils capable of being readily shaped and compacted to the required densities, and shall be reasonably free of roots, trash, rock larger than 2 inches, and other deleterious material.
- B. All soils used for structural fills shall have a PI (plastic index) of less than 10, and a LL (liquid limit) of less than 30. Fill soils shall be dried or wetted to appropriate moisture contents prior to compaction. Additionally, fill soils used for the top 2 feet of fill beneath roads and parking lots shall have no more than 15% passing the # 200 sieve. Fill soils used for house lots shall have no more than 25% passing the # 200 sieve.
- C. Contractor shall furnish all borrow material.
- D. Contractor shall be responsible for and bear all expenses in developing borrow sources including securing necessary permits, drying the material, haul roads, clearing, grubbing, excavating the pits, placing, compaction and restoration of pits and haul roads to a condition satisfactory to property owners and in compliance with applicable federal, state, and local laws and regulations.

2.2 SOURCE QUALITY CONTROL

- A. If tests indicate materials do not meet specified requirements, change material and retest.
- B. Provide materials of each type from same source throughout the Work.

PART 3 – EXECUTION

3.1 TOPSOIL

- A. Contractor shall strip topsoil and stockpile on site at a location determined by the Owner at the Contractor's expense.
- B. Topsoil shall be placed to a depth of 4 inches over all disturbed or proposed landscaped areas.
- C. Topsoil shall be provided at Contractor's expense if it is not available from site.

- D. Any remaining topsoil determined by the Owner or Engineer to be useful will be stored on site at a location determined by the Owner at the Contractor's expense.
- E. Do not excavate wet topsoil.

3.2 EXCAVATION

- A. Suitable excavation material shall be transported to and placed in fill areas within limits of the work.
- B. Unsuitable material encountered in areas to be paved and under building pads, shall be excavated 2 feet below final grade and replaced with suitable material from site or borrow excavations. Contractor shall notify Engineer if more than 2 feet of excavation is needed to replace unsuitable material.
- C. Unsuitable and surplus excavation material not required for fill shall be disposed of off site.
- D. Proper drainage, including sediment and erosion control, shall be maintained at all times. Methods shall be in accordance with the National Pollutant Discharge Elimination System standards and other local, state, and federal regulations.
- E. Unsuitable materials as stated herein are defined as highly plastic clay soils, of the CH and MH designation, border line soils of the SC-CH description, and organic soils of the OL and OH description based on the Unified Soils Classification System. Further, any soils for the top two feet of pavement subbase shall have no more than 15% passing the # 200 sieve.

3.3 GROUND SURFACE PREPARATION FOR FILL

- A. All vegetation, roots, brush, heavy sods, heavy growth of grass, decayed vegetable matter, rubbish, and other unsuitable material within the areas to be filled shall be stripped and removed prior to beginning the fill operation.
- B. Sloped ground surfaces steeper than 1 vertical to 4 horizontal, on which fill is to be placed shall be plowed, stepped, or benched, or broken up as directed, in such a manner where fill material will bond with the existing surface.
- C. Surfaces on which fill is to be placed and compacted shall be wetted or dried as may be required to obtain the specified compaction.

3.4 FILL

- A. Shall be placed in successive horizontal layers 8 inches to 12 inches in loose depth for the full width of the cross-section and compacted as required.

3.5 FINISHED GRADING

- A. All areas covered by the project including excavated and filled sections and adjacent transition areas shall be smooth graded and free from irregular surface changes.
- B. Degree of finish shall be that ordinarily obtainable from either blade-grader or scraper operations, supplemented with hand raking and finishing, except as otherwise specified.
- C. Unpaved areas to within 0.1 feet of elevations shown on the drawings provided such deviation does not create low spots that do not drain.
- D. Paved Areas – Subgrade to within 0.05 feet of the drawing elevations less the compacted thickness of the base and paving.
- E. Building Pads – Subgrade to within 0.05 feet of the drawing elevations [less the thickness of the concrete slab].
- F. Ditches and lagoon banks shall be finished graded, dressed, and seeded within 14 calendar days of work to reduce erosion and permit adequate drainage.

3.6 DISPOSAL OF WASTE MATERIAL

- A. All vegetation, roots, brush, sod, broken pavements, curb and gutter, rubbish, and other unsuitable or surplus material stripped or removed from limits of construction shall be disposed of by the Contractor.

3.7 PROTECTION

- A. Graded areas shall be protected from traffic, erosion, settlement, or any washing away occurring from any cause prior to acceptance.
- B. Contractor shall be responsible for protection of below grade utilities shown on the drawings or indicated by the Owner at all times during earthwork operations.
- C. Repair or re-establishment of graded areas prior to final acceptance shall be at the Contractors expense.

- D. Site drainage shall be provided and maintained by Contractor during construction until final acceptance of the project. Drainage may be by supplemental ditching, or pumping if necessary, prior to completion of permanent site drainage.

3.8 DRAINAGE

- A. Contractor shall be responsible for providing surface drainage away from all construction areas. This shall include maintenance of any existing ditches or those constructed in the immediate vicinity of the work. Contractor shall provide proper and effective measures to prevent siltation of wetlands, streams, and ditches on both the Owner's property, and those properties downstream.

3.9 FIELD QUALITY CONTROL

- A. Compaction testing shall be performed in accordance with ASTM D 6938. Where tests indicate the backfill does not meet specified requirements, the backfill shall be reworked or removed and replaced, and then retested at the Contractor's expense.
- B. Unpaved areas – at least 90% of maximum laboratory density within 2% optimum moisture content unless otherwise approved by the Engineer.
- C. Paved Areas and Under Structures – top 6 inch layer of subbase to at least 98% of maximum laboratory density within 2% optimum moisture content. Layers below top 6 inches shall be compacted to 95% of maximum laboratory density within 2% optimum moisture content.
- D. Rolling and compaction equipment and methods shall be subject to acceptance by the Engineer. Acceptance in no way relieves Contractor of the responsibility to perform in correct and timely means.
- E. Number of Tests – Under paved areas, no less than one density test per horizontal layer per 5,000 square feet of subbase shall be made. In unpaved areas, no less than one density test per horizontal layer per 10,000 square feet of fill area shall be made. Under curb and gutter, no less than one density test per every 300 linear feet. [On building pads, no less than one density test per horizontal layer per 1,500 square feet of fill area shall be made.]

END OF SECTION

SECTION 311000 – SITE CLEARING

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Removal of surface debris.
- B. Removal of trees, shrubs, and other plant life.
- C. Topsoil excavation.

1.2 RELATED SECTIONS

- A. Section 31 00 00 – Earthwork.

1.3 REGULATORY REQUIREMENTS

- A. Conform to State and County codes for disposal of debris.
- B. Coordinate clearing Work with utility companies.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Provide tree protection materials as detailed on the construction drawings.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Verify existing plant life designated to remain is tagged or identified.

3.2 PROTECTION

- A. All trees on site will be saved except those marked specifically by the Owner's representative for removal during construction. No trees, including those marked for removal on site or any other tree, may be removed prior to the preconstruction conference. All trees not to be removed will be protected from injury to their roots and to their top to a distance three feet beyond the drip-line and no grading, trenching, pruning, or storage of materials may go in this area except as provided by an Owner's representative stakeout. Contractor will pay a penalty for any tree removed from the site that has not been marked specifically for removal.

Contractor also will pay for any tree that dies due to damage during construction. This applies to all trees on site whether or not they are shown on the plans.

- B. Contractor shall not be held accountable for damages to trees resulting from placement of fill or removal of soils where such action is required by the contract documents. Any tree, the trunk of which is within 10 feet of any footing or trench, shall be exempt from these penalties except Contractor shall exercise all reasonable precautions to preserve even these trees. Contractor agrees to pay fines as established below in the event he or any of his subcontractors causes loss or removal of trees designated to be saved under provisions of this contract. The fines are as follows:

<u>Caliper</u>	<u>Fine</u>
1" – 2"	\$ 150.00
2" – 3"	200.00
3" – 4"	250.00
4" – 5"	400.00
5" – 6"	500.00
6" – 7"	600.00
7" – 8"	750.00
8" – 11"	1,500.00
12" – 20"	2,000.00
21" & larger	\$ 2,500.00

- C. Trees shall be graded by Owner’s representative as to variety, condition, and site importance, with above figures acting as a maximum fine. Lowest assessment amount shall be no less than one-half of the above fine figures.
- D. Protect benchmarks, survey control points, and existing structures from damage or displacement.
- E. Protect all remaining utilities.
- F. Clearing operations shall be conducted to prevent damage by falling trees to trees left standing, to existing structures and installations, and to those under construction, and to provide for the safety of employees and others.

3.3 CLEARING

- A. Clear areas required for access to site and execution of work. Clearing shall consist of felling and cutting trees into sections, and satisfactory disposal of trees and other vegetation designated for removal, including downed timber, snags, brush, and rubbish occurring within area to be cleared. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be removed completely from the site, except such trees and vegetation as may be indicated or directed to

be left standing. Trees designated to be left standing within cleared areas shall be trimmed of dead branches 1–1/2 inch or more in diameter. Limbs and branches to be trimmed shall be neatly cut close to the trunk of the tree or main branches. Cuts more than 1–1/2 inches in diameter shall be painted with an accepted treewound paint. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations, by the erection of timber barriers or by such other means as circumstances require. Such barriers must be placed and be checked by the OWNER before construction observations can proceed (See 3.2). Clearing shall also include removal and disposal of structures obtruding, encroaching upon, or otherwise obstructing the work.

3.4 REMOVAL

- A. Where indicated or directed, trees and stumps shall be removed from areas outside those areas designated for clearing and grubbing. Work shall include felling of such trees and removal of their stumps and roots. Trees shall be disposed of as hereinafter specified.
- B. Remove debris, rock, and other extracted plant life from site.

3.5 DISPOSAL

- A. Disposal of trees, branches, snags, brush, stumps, etc., resulting from clearing and grubbing shall be the Contractor's responsibility and shall be disposed of, by removal from site. All costs in connection with disposing of materials will be at the Contractor's expense. All liability of any nature resulting from disposal of cleared and grubbed material shall become the Contractor's responsibility. Disposal of all materials cleared and grubbed will be in accordance with rules and regulations of the State of South Carolina. No material will be burned.

3.6 GRUBBING

- A. Grubbing shall consist of removal and disposal of stumps, roots larger than one inch in diameter, and matted roots from designated grubbing areas. This material, together with logs and other organic or metallic debris not suitable for building of pavement subgrade or building pads, shall be excavated and removed to a depth of not less than 18 inches below original surface level of the ground in embankment areas and not less than 2 feet below finished earth surface in excavated areas. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform to original adjacent ground.

END OF SECTION

SECTION 311210 - CONSTRUCTION OF SPORTS FIELDS

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Work under this Section includes but is not limited to all Work associated with the construction of the playing field and is generally understood to include all sports field-related construction.
- B. The Contractor shall be responsible for providing all services, labor, equipment and materials necessary or convenient to the Contractor for completing the Work within the time specified in the Contract Documents, including but not limited to the following:
 - 1. Verification of subgrade to meet specified tolerances.
 - 2. Materials and labor to construct the specified rootzone.
- C. The elevations shown on the Drawings as existing are taken from the best existing data and are intended to give reasonably accurate information about the existing elevations. The Contractor shall become satisfied as to the exact quantities of materials and labor required to complete the Work of this Section.

1.2 QUALITY ASSURANCE

- A. Inspection and Approval:
 - 1. Wherever the terms "approve", "approval", or approved", are used, they shall mean the approval of the Owner and Architect/Engineer.
 - 2. Materials and workmanship are subject to inspection by the Owner and Architect/ Engineer at any time and place, before or after installation, for compliance.
 - 3. Furnish the Owner and Architect/Engineer with every reasonable facility for ascertaining whether or not the Work performed and the products used are in accordance with the intent and requirements of the Specifications and Contract Documents. No Work shall be done or products used without suitable inspection by the Owner and Architect/Engineer. Failure to reject any defective Work or product shall not in any way prevent later rejection when such defect is discovered, or obligate the Owner to final acceptance.
 - 4. Inspection of the Work shall not relieve the Contractor of any obligations to fulfill the Contract. Defective Work shall be made good regardless of whether such Work has been previously inspected by the Owner and Architect/Engineer and accepted or estimated for payment. Failure of the Owner and Architect/Engineer to reject improper Work shall not be considered a waiver of any defect which may be discovered later or for Work

actually defective.

5. Contractor shall coordinate with the Owner's and Architect/Engineer's on-site representative to monitor progress and compliance with Plans and Specifications.
6. Inspected work that is found to be in violation of the Plans or Specifications shall be brought into compliance before the following, scheduled inspection.
7. Provide surveys performed by a surveyor licensed in the State of South Carolina.

B. Materials Equipment & Workmanship Warranty:

1. Guarantee workmanship for 12 months from the date of project final acceptance by Owner.
2. Equipment and fittings shall be warranted according to manufacturer's guarantee.

C. Contractor Qualifications:

All WORK associated with constructing the sports fields within the perimeter of the sports fields, after subgrade construction, shall be performed by a Qualified Sports field Contractor meeting the following:

1. Shall be a Certified Field Builder with a demonstrated ability to successfully construct professional- quality sports turf venues.
2. Shall have renovated or constructed a minimum of 5 sports turf facilities within the last 10 years.
3. Shall exhibit a high standard of professional conduct by not having defaulted on a bond or contract nor been involved in any litigation resulting from failure to perform on any past project.

1.3 TESTING AND QUALITY CONTROL

A. Grading Tolerances and Verification

1. Verification of the Finished Subgrade
 - a. Prior to commencing installation of the drainage and irrigation systems, Owner and Architect/Engineer shall meet on site with Contractor to verify that finished subgrade falls within the specified tolerances. Surveyor shall take elevation readings at 10 random locations on each field to verify compliance.
 - b. If any of the elevations fail to fall within the specified tolerances, the area shall be regraded until it meets specifications.
 - c. If all of the readings reveal subgrade is uniformly high or low, indicating uniform planarity, the Owner shall review contractor's

- recommendation and determine if recommended action is appropriate.
- d. Tests for compaction, moisture-content, and density compliance shall be conducted by an independent geotechnical engineer and shall be paid for by the Owner.
2. Verification of Finished Grade Before Grassing
 - a. After final grading but before grassing is installed, Owner and Architect/Engineer shall meet on site with Contractor to verify finished grade falls within the specified tolerances. Surveyor shall take elevation readings at 10 random locations on each field to verify compliance.
 - b. If any of the elevations fail to fall within the specified tolerances, the area shall be regraded until it meets specifications.
 - c. If all of the readings reveal grade is uniformly high or low, indicating uniform planarity, the Owner shall determine appropriate action.

B. Materials Testing

1. Rootzone Testing – Criteria
 - a. Materials testing for compliance by Tifton Physical Soil Testing Laboratory or other approved lab.
 - b. Contractor shall make all necessary excavations and shall supply any samples of materials necessary for conducting all tests. The cost of all re-tests made necessary by the failure of materials to comply with the requirements of the Contract Documents shall be paid by the Contractor.
 - c. Materials to be used for rootzone components shall be tested as follows:
 - d. **Complete Physical Analysis of Soil/Rootzone Mix (ASTM F1815)** to include water permeability rate, pore space distribution, bulk density, water retention, pH, and particle size analysis.
2. Rootzone and Drainage Materials Testing -Before Construction Begins
 - a. Testing shall be paid for by the Owner and samples gathered by the Contractor.
 - b. Materials to be used for rootzone components and the underdrain backfill, if applicable, shall be tested.
3. Materials Verification Testing Before Delivery to Site
 - a. Testing of the rootzone and drainage materials for compliance before construction commences shall be paid for by the Contractor at the stockpile location or the vendor's yard prior to delivery to job site.
 - b. Obtain a 1 gallon sample from each of the rootzone materials, and have a Physical Analysis (**ASTM F1815**) test made by the same testing laboratory that tested the Contractor's submitted materials.
 - c. Materials that do not comply with the Contract Documents will be rejected.

1.4 GRADING TOLERANCES

A. ROOTZONE LESS SPORTS TURF

1. Rootzone shall be constructed as specified herein and in all areas uniformly fall within +/- 1/2 inch of the specified finish grade less sod thickness.

B. FINISH GRADE WITH SPORTS TURF INSTALLED

1. Finish grade after installing and rolling sports turf in all areas uniformly fall within +/- 1/2 inch of the specified finish grade.

1.5 JOB CONDITIONS

- A. Utilities Protection: The sports field construction plan is not a survey of underground utilities. It is the responsibility of the Contractor to have all utilities clearly marked before starting work and to have the markings maintained throughout construction.
- B. Protection of Existing Site Elements: Protect remaining site elements, the work of other trades, adjacent properties, and easements, and rights-of-way, and all areas outside of the limit-of-work area. Damages shall be repaired at the Contractor's expense.
- C. Product Storage: During construction and storage, protect materials from damage, theft, and prolonged exposure to sunlight.
- D. Keep premises free from rubbish, debris, and waste material, at all times. Store materials so as not to interfere with the operation of the Project.
- E. Protection of Contractor's Work, Equipment, and Materials Contractor is solely responsible for protecting his work, materials, and equipment from damage, theft, and vandalism.
- F. The Contractor shall correlate his work with other site developments, Contractors, and County work crews to accommodate other work, special events, and use of the site during construction.
- G. Sports field Construction operations shall be performed in a safe and proper manner, by Contractors meeting the qualifications described herein, with appropriate precautions being taken against all hazards.
- H. Work associated with this Section shall be maintained by the Contractor in good condition at all times until final acceptance by the Owner. Damage caused by erosion, acts of God, or construction operations during the life of the Contract, shall be repaired at the Contractor's expense using material of the same type as specified herein.
- I. The Contractor shall control grading in a manner to prevent water running into excavations. Obstruction of surface drainage shall be avoided and means shall be provided whereby storm water can drain uninterrupted in existing gutters, other surface drains or temporary drains. Free access must be provided to all fire hydrants, water valves and meters.

1.6 SUBMITTALS

- A. The Contractor shall submit the following information to the Owner for review and approval:
- B. Materials To Be Submitted With Bid
 - 1. List of subcontractors and vendors to be used including: blending Contractor, rootzone- amendment supplier(s), irrigation subcontractor (if work is to be subcontracted), and sports turf Contractor (if work is to be subcontracted).
- C. Materials To Be Submitted After Bid and During Construction
 - 1. Test results of the rootzone materials (amendments, topsoil inorganic amendments, and nutrient requirements from the specified laboratory.)
 - 2. Final rootzone mixture specifications based upon a Complete **Physical Analysis of Soil/Rootzone Mix (ASTM F1815)**.
 - 3. Certificates and Bills of Lading for all rootzone material and amendment deliveries.
 - 4. Product warranties and manufacturer specification sheets that prove a product's compliance and suitability for inclusion in the Work.
 - 5. Use a Certified Lab to perform a **Complete Physical Analysis on Rootzone Mix** and provide mixture specification recommendations, including compliance of materials and/or organic Matter source and quantity, and other amendments necessary.

PART 2 - PRODUCTS, MATERIALS, AND EQUIPMENT

2.1 SPORTS FIELD CONSTRUCTION EQUIPMENT

- A. Grading equipment used to construct the sports field shall be either low-ground pressure (max 4.7 psi) bulldozers equal to a CAT LGP D5, or a three-axle motor grader weighing not more than 8500 lbs.
- B. Tiller / Cultivator for Incorporating Amendments shall be either a ROTERA cultivator or a Lily Earth-Shaper, pulled behind a rubber-tired tractor maximum 75 hp.
- C. Aeration of the rootzone shall be made using an aerator equal to an Aeroway AERAVATOR pulled by a max. 75 hp, rubber-tired tractor.

2.2 ROOTZONE PROFILER

A. Install rootzone mix to depths shown on plans on sports fields only, or as directed by Architect/Engineer.

B. ROOTZONE SAND

Materials shall meet the following specifications for Root Zone Mix:

1. Water Permeability Rate (ASTM F 1815): 8.0 – 15.0 in./ hr.
2. Water Retention at FC: 12-18%
3. Particle size criteria for Rootzone Mix:
 - a. Fine Sand with approximately 6-10% silt and clay (<5% clay)
 - b. Washed sands are not required if permeability and water retention rates can be met with unwashed “dirty” sands.

C. INORGANIC SOIL CONDITIONER

Soil conditioners and inorganic rootzone amendments such as vitrified or calcined clay shall be equal to TURFACE MVP SPORTS FIELD CONDITIONER for heavier clay soils or PROFILE FIELD & FAIRWAY CONDITIONER for sandier soils manufactured by Profile Products LLC or approved equal.

Material shall be an illite, montmorillinite clay & silica blend at 40% minimum and 60% minimum amorphous silica, processed in a rotary kiln at temperatures not less than 1200 degrees Fahrenheit.

Material shall be screened and de-dusted.

Material shall not exceed 5% degradation on ASTM-C88 Sulfate Soundness Test, nor exceed 5% degradation on a Static Degradation Test.

D. ORGANIC MATTER

Organic matter and other amendments shall be incorporated into the rootzone mix in accordance with the approved rootzone mixture specification based on testing and/or laboratory recommendation.

2.3 SPORTS TURF

A. As described in Section 329200 Turf and Grasses.

PART 3 - EXECUTION

3.1 SUBGRADE ADJUSTMENTS AND ACCEPTANCE

A. The Contractor shall carefully schedule the sports field construction work with all other site development.

- B. Contractor shall commence his Work immediately after subgrade elevation of the sports field has been reached and that Work has been acceptably completed in accordance with the Contract Documents.

3.2 STAKING AND LAYOUT

- A. Sports field-related Work shall be located in the field accurately and in compliance with the Drawings by a qualified Surveyor, who shall be employed directly by the Contractor.
- B. During layout, consult with the Owner to verify proper placement and for recommendations where adjustments are required.
- C. Do not commence any Work of this Section without Owner's and Architect/Engineer's approval of the staked locations of the sports field elements.
- D. Contractor to stake out field corners for Owner's and Architect/ Engineer's approval prior to field installation.

3.3 UNDERGROUND IRRIGATION SYSTEM

- A. The irrigation system laterals, mains, swing-joint connections, valves, wiring, and flow-control devices shall be installed prior to commencing work on the under field drainage system, if applicable, and after subgrade adjustment is completed.
- B. Install the irrigation system as described as described on Plans.

3.4 ROOTZONE CONSTRUCTION

- A. After grading the surface, Contractor shall construct the rootzone as follows:
 1. Install the rootzone to a minimum depth of 6" and assure it meets the uniform depth specified, and that laboratory test results indicate compliance with specifications.
 2. Apply the inorganic soil conditioner, if required, and thoroughly and homogeneously incorporate throughout the rootzone.
 3. After completely constructing the rootzone layer, grade and roll surface to the grades specified.
 4. Apply fertilizer and any other amendments and nutrients specified by soil test at the specified rates. Incorporate fertilizer using an aerator, as specified, by making two passes in opposite directions, or as necessary to completely and homogeneously incorporate the amendments throughout the rootzone.
 5. Roll and grade surface, using the roller and grading equipment described herein, to assure the finished, compacted grade everywhere falls within the specified tolerances.

3.5 CLEAN-UP

- A. Remove litter, debris, and waste material from site daily.
- B. Clean all equipment and remove standing water from valve boxes and other equipment prior to final inspection.
- C. Locate debris piles generally out of sight and allow Owner safe, unobstructed access and to maintain traffic sightlines.
- D. Do not use local trash collectors or dumpsters without written permission.

3.6 BASIS OF ACCEPTANCE

- A. After successful completion of all required work, repairs, replacements, punch-list items, and the submittal of all required materials, the Contractor shall arrange a final inspection of the work by the Owner and Architect/Engineer.
- B. Acceptance of the work shall be contingent upon the decision of the Owner.

END OF SECTION 311210

SECTION 312500 – EROSION AND SEDIMENTATION CONTROLS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Special Conditions apply to this section.

1.2 DESCRIPTION OF WORK

- A. Extent of soil erosion control work includes all measures necessary to meet the requirements of this section.

Erosion and sediment control measures shall be installed prior to any construction activity.

Soil erosion and sediment control measures shall include all temporary and permanent means of protection and trapping soils of the construction site during land disturbing activity. Activity covered in this contract shall meet standards of NPDES General Permit for the state where work is performed.

1.3 PURPOSES

- A. Contractor is to achieve the following goals:
 1. Minimize soil exposure by proper timing of grading and construction.
 2. Retain existing vegetation whenever feasible.
 3. Vegetate and mulch denuded areas as soon as possible.
 4. Divert runoff away from denuded areas.
 5. Minimize length and steepness of slopes when it is practical.
 6. Reduce runoff velocities with sediment barriers or by increasing roughness with stone.
 7. Trap sediment on site.
 8. Inspect and maintain erosion control measures.

1.4 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Firms regularly engaged in the manufacture of soil erosion control systems products of types and sizes required, whose materials have been in satisfactory use for not less than 5 years.
- B. Codes and Standards: Comply with all applicable Local, State, and Federal Standards pertaining to soil erosion control.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data and installation instruction for soil erosion control materials and products.

PART 2 – PRODUCTS

2.1 GRASSING MATERIALS

- A. Refer to Section 32 92 00 – Turf and Grasses.

2.2 SILT FENCE

- A. Silt fence shall be a woven geotextile fabric sheet. Fabric shall be a synthetic polymer composed of at least 85% by weight propylene, ethylene, amide, ester, or vinylidene chloride, and shall contain stabilizer and/or inhibitors added to the base plastic to make filaments resistant to deterioration due to ultra-violet and/or heat exposure. Fabric should be finished so the filaments will retain their relative position with respect to each other. Fabric shall be free of defects, rips, holes, or flaws.

Fabric shall meet the following requirements:

Woven Fabrics	
Grab Strength	90 lbs
Burst Strength	175 PSI
UV Resistance	80%

2.3 RIP-RAP

- A. Shall be hard quarry or field stone of such quality the pieces will not disintegrate on exposure to water, sunlight, or weather. Stone shall range in weight from a minimum of 25 pounds to a maximum of 125 pounds. At least 50 percent of the stone shall weigh more than 60 pounds. The stone shall have a minimum dimension of 12 inches.

2.4 PRODUCT REVIEW

- A. Contractor shall provide the Engineer with a complete description of all products before ordering. Engineer will review all products before they are ordered.

PART 3 – EXECUTION

3.1 GENERAL

- A. All disturbed soil areas except those to support paving shall be graded and protected from erosion by grassing. Disturbed areas must be grassed within 14 days of work ending unless work is to begin again before 21 days. Storm water conveyance systems shall have sediment barriers installed at all entrances, intersections, change in direction and discharge points.

3.2 GRASSING

- A. Refer to Section 329200 – Turf and Grasses.

3.3 DEDIMENT BARRIERS

A. Rock Ditch Check

1. Excavate a 6 inch deep trench the width and length of proposed barrier. Install a non-woven geotextile fabric in the trench before placing rock for the ditch check.
2. The body of the ditch check shall be constructed of 12 inch rip-rap. The upstream face may be covered with 1-inch washed stone.
3. Ditch checks shall not exceed a height of 2 feet at centerline of the channel and have a minimum top flow length of 2 feet.
4. Rip-rap shall be placed over the channel banks to prevent water from flowing around ditch check. Rock must be installed by hand or mechanical placement (no dumping of rock) to achieve complete coverage of the ditch and ensure the center of the check is lower than the edges.
5. The maximum spacing between ditch checks shall be where the toe of the upstream check is at the same elevation as the top of the downstream check.
6. Contractor shall maintain ditch checks as required by State regulations.

3.4 SILT FENCE

- A. Silt fence shall be placed at approximate location shown and installed in accordance with the detail on the construction drawings. Contractor shall maintain silt fence as required by state regulations.

3.5 SEDIMENT BASIN

- A. See construction plans

3.6 RIP-RAP

- A. Rip-Rap shall be placed at the locations shown and installed in accordance with the detail on the construction drawings.

3.7 CONSTRUCTION EXIT

- A. Construct exit at the location shown per detail on the construction drawings. Contractor shall maintain construction exit as required by state regulations.

3.8 INLET PROTECTION

- A. Install inlet protection per detail on the construction drawings. Contractor shall maintain inlet protection as required by state regulations until all disturbed surfaces are stabilized.

END OF SECTION

SECTION 313700 – RIP-RAP

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Material placed as bank protection and erosion control.

1.2 RELATED SECTIONS

1.3 ALLOWABLE TOLERANCES

- A. Depth of rip–rap blanket as shown on the drawings and in these specifications is a minimum depth.

1.4 REFERENCES (LATEST REVISION)

- A. ASTM C 150 – Portland Cement.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Stone Rip–Rap: Shall be hard quarry or field stone of such quality the pieces will not disintegrate on exposure to water, sunlight, or weather. Stone shall be solid and non–friable and range in weight from a minimum of 25 pounds to a maximum of 150 pounds. At least 50 percent of the stone pieces shall weigh more than 60 pounds. The stone pieces shall have a minimum dimension of 12 inches. Documents indicating stone analysis, source and other pertinent data (i.e. – filter fabric) shall be submitted for review by the Engineer prior to delivery.
- B. Filter Fabric: Shall be a woven fabric of monofilament and multifilament yarn equivalent to Mirafi FW700. Fabric shall be finished so the filaments will retain their relative position with respect to each other. Fabric shall contain stabilizers and/or inhibitors added to make filaments resistant to deterioration due to ultraviolet and/or heat exposure. Fabric shall be free of flaws, rips, holes, or defects.

2.2 PRODUCT REVIEW

- A. Contractor shall provide the Engineer with a complete description of all products before ordering. Engineer will review all products before they are ordered.

PART 3 – EXECUTION

3.1 PREPARATION

- A. The surface to receive rip-rap shall be prepared to a relatively smooth condition free of obstruction, depressions, debris, rises, and soft or low density pockets of material. Contours and elevations on construction drawings are to the surface of rip-rap material.

3.2 PLACEMENT

- A. Filter fabric shall be placed with the long dimension running up slope. The strips shall be placed to provide a minimum width of one foot of overlap for each joint. Fabric shall be anchored in place with securing pins of the type recommended by fabric manufacturer. Pins shall be placed on or within 3 inches of the over-lap. Place fabric so upstream strip will overlap the downstream strip. Fabric shall be placed loosely to give and avoid stretching and tearing during placement of the stones.
- B. Minimum depth or thickness of stone blanket shall be 12 inches with no under tolerance. Stones shall be dropped no more than three feet during construction. Placing shall begin at bottom of slope. Provide a toe trench if required as detailed on the construction drawings. Entire mass of stone shall be placed to conform with lines, grades, and thickness shown on the plans. Rip-rap shall be placed to its full course thickness at one operation and in such a manner as to avoid displacing the underlying material. Placing of rip-rap in layers, or by dumping into chutes, or by similar methods likely to cause segregation, will not be permitted.

It is the intent of these specifications to produce a fairly compact rip-rap protection in which all sizes of material are placed in their proper proportions. Hand placing or rearranging of individual stones by mechanical equipment may be required to secure the results specified.

- C. Sand-Cement Bag Rip-Rap: Bags shall be uniformly filled. Bagged rip-rap shall be placed by hand with tied ends facing the same direction, with close, broken joints. After placing, bags shall be rammed or packed against one another to produce the required thickness and form a consolidated mass. The top of each bag shall not vary more than 3 inches above or below required plane. When directed by the Engineer or required by construction drawings, header courses shall be placed.

END OF SECTION

SECTION 321123 – AGGEGATE BASE COURSES

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Aggregate base course.

1.2 RELATED SECTIONS

- A. Section 01 45 00 – Quality Control.
- B. Section 31 00 00 – Earthwork

1.3 REFERENCES (LATEST REVISION)

- A. ASTM C 131 – Resistance to Degradation of Small–Size Course Aggregate by Abrasion and Impact in the Lost Angeles Machine.
- B. ASTM D 1557 – Laboratory Compaction Characteristics of Soil Using Modified Effort.
- C. ASTM D 6938 – In–Place Density and Water Content of Soil and Soil–Aggregate by Nuclear Methods (Shallow Depth).
- D. ASTM D 3740 – Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock Used in Engineering Design and Construction.
- E. ASTM E 329 – Agencies Engaged in Construction Inspection and/or Testing.

1.4 QUALITY ASSURANCE

- A. Perform work in accordance with the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction. If there are discrepancies between the SCDOT Specification and the below, the SCDOT specifications will govern.

1.5 TESTING

- A. Laboratory tests for moisture density relationship for fill materials shall be in accordance with ASTM D 1557, (Modified Proctor).
- B. In place density tests in accordance with ASTM D 6938.

- C. Testing laboratory shall operate in accordance with ASTM D 3740 and E 329 and be acceptable to the Engineer.
- D. Testing laboratory and Project Engineer/Project Representative shall be given a minimum of 48 hours notice prior to taking any tests.
- E. Owner shall select and engage the Testing Laboratory. Testing Laboratory shall be responsible to the Owner and Owner’s Engineer. Payment for laboratory and all tests shall be by the Owner, except Owner specifically reserves the right to deduct from Contractor’s payment, expenses and charges of Testing Laboratory when:
 - 1. Contractor gives notice the work is ready for inspection and testing, and fails to be ready for the test, and/or
 - 2. Testing of the Contractor’s work, products, or materials fail, and retesting is required, and/or
 - 3. Contractor abuses the services or interferes with the work of the testing laboratory in the conduct of this work.
- F. Test results shall be furnished to the Engineer prior to continuing with associated or subsequent work.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Aggregate shall consist of processed and blended crushed stone. Aggregates shall be free from lumps and balls of clay, organic matter, objectionable coatings, and other foreign material and shall be durable and sound. Coarse aggregate shall have a percentage of wear not to exceed 65% after 500 revolutions as determined by ASTM C 131. Aggregate shall meet applicable requirements of Section 305.2 in the South Carolina Department of Transportation Standard 2007 Specifications for Highway Construction. Material shall meet the following gradation and other requirements:

Granite Stone or Recycled Concrete	
Sieve Size	Percent by Weight Passing
2”	100
1-1/2”	95 – 100
1”	70 – 100
1/2”	48 – 75
# 4	30 – 60
# 30	11 – 30

#200	0 – 12
Liquid Limit	0 to 25
Plasticity Index	0 to 6

Marine Limestone	
Sieve Size	Percent by Weight Passing
2"	100
1 – 1/2"	95 – 100
1"	70 – 100
1/2"	50 – 85
# 4	30 – 60
#30	17 – 38
#200	0 – 20
Liquid Limit	0 to 25
Plasticity Index	0 to 6

- B. Prime Coat: Shall be EA–P Special, Emulsified asphalt, conforming to Section 407 of the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify subbase has been tested, is dry, and slopes and elevations are correct.
- B. ON SITE OBSERVATIONS OF WORK: Owner's Representative or Engineer will have the right to require any portion of the work be completed in their presence. If the work is covered up after such instruction, it shall be exposed by Contractor for observation at no additional cost to the Owner. However, if Contractor notifies Owner such work is scheduled, and the Owner fails to appear within 48 hours, Contractor may proceed. All work completed and materials furnished shall be subject to review by the Owner, Engineer, or Project Representative. Improper work shall be reconstructed. All materials, which do not conform to requirements of specifications, shall be removed from the work upon notice being received from Engineer for rejection of such materials. Engineer shall have the right to mark rejected materials to distinguish them as such.
- C. Contractor shall give the Owner, Project Engineer or Project Representative a minimum of 48 hours notice for all required observations or tests.

3.2 PREPARATION

- A. Subbase shall be graded and shaped conforming to the lines, grades, and cross sections required and cleaned of all foreign substances prior to constructing base

course. Do not place base on soft, muddy or frozen surfaces. Correct irregularities in subbase slope and elevation by scarifying, reshaping, and recompacting.

- B. At the time of base course construction, subbase shall contain no frozen material.
- C. Surface of subbase shall be checked by the Engineer or Project Representative for adequate compaction and surface tolerances. Ruts or soft yielding spots appearing in areas of subbase course having inadequate compaction, and areas not smooth or which vary in elevation more than 3/8 inch above or below required grade established on the plans, shall be corrected to the satisfaction of the Engineer or Project Representative. Base material shall not be placed until subbase has been properly prepared and test results have so indicated.

3.3 AGGREGATE PLACEMENT

- A. Aggregate shall be placed in accordance with South Carolina Department of 2007 Transportation Standard Specifications for Highway Construction Section 305 and in accordance with all terms included in these specifications.
- B. Level and contour surfaces to elevations and slopes indicated.
- C. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- D. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- E. Use mechanical tamping equipment in areas inaccessible to compaction equipment.
- F. While at optimum moisture ($\pm 1\text{--}1/2\%$), compact base course with rollers capable of obtaining required density. Vibratory, flatwheel, and other rollers accepted by the Engineer may be used to obtain required compaction. Rolling shall continue until base is compacted to 98% of the maximum laboratory dry density as determined by ASTM D 1557. In-place density of the compacted base will be determined in accordance with ASTM D 6938.

3.4 PRIME COAT

- A. Bituminous material for the prime coat shall be applied uniformly and accurately in quantities of not less than 0.15 gallons per square yard nor more than 0.30 gallons per square yard of base course. All irregularities in the base course

surface shall be corrected prior to application of prime coat. Clean the base course of all mud, dirt, dust, and caked and loose material.

- B. Do not apply prime to a wet surface nor when temperature is below 40°F in the shade. Do not apply prime when rain threatens nor when weather conditions prevent proper construction and curing of prime coat.
- C. The primed base should be adequately cured before the binder or surface course is laid. In general, a minimum of 48 hours should be allowed for complete curing. Ordinarily, proper surface condition of the prime is indicated by a slight change in the shiny black appearance to a slightly brown color.

3.5 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with an acceptable 10-foot straight edge.
- B. Scheduled Compacted Thickness: Within 3/8 inch.
- C. Variation from Design Elevation: Within 3/8 inch.
- D. Depth measurements for compacted thickness shall be made by test holes through the base course. Where base course is deficient, correct such areas by scarifying, adding base material, and recompacting as directed by the Engineer.

3.6 FIELD QUALITY CONTROL

- A. Section 01 45 00 – Quality Control: Field observation.
- B. Density and moisture testing will be performed in accordance with ASTM D 1557 and ASTM D 6938.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- D. Frequency of Tests:
 - 1. Base Density and Thickness – One test per 5,000 square feet.

END OF SECTION

SECTION 321216SC – ASPHALT PAVING

PART 1 – GENERAL

1.1 SELECTION INCLUDES

- A. Surface Course
- B. Binder Course

1.2 RELATED SECTIONS

- A. Section 01 45 00 – Quality Control
- B. Section 31 00 00 – Earthwork
- C. Section 32 11 23 – Aggregate Base Courses

1.3 REFERENCES (LATEST REVISION)

- A. ASTM D 946 – Penetration–Graded Asphalt–Cement for Use in Pavement Construction.
- B. ASTM E 329 – Agencies Engaged in Construction Inspection and/or Testing.
- C. ASTM D 3740 – Minimum Requirements for Agencies Engaged in Testing and/or Inspection of Soil and Rock Used in Engineering Design and Construction.
- D. ASTM D 2726 – Bulk Specific Gravity and Density of Non–Absorptive Compacted Bituminous Mixtures.
- E. ASTM D 2950 – Density of Bituminous Concrete in Place by Nuclear Methods.
- F. ASTM D 1188 – Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples.
- G. ASTM D 1754 – Effect of Heat and Air on Asphaltic Materials (Thin–film Oven Test).

1.4 QUALITY ASSURANCE

- A. Perform work in accordance with South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction. If there are discrepancies between the SCDOT Specification and the below, the SCDOT specifications will govern.

- B. Mixing Plant: Conform to South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt mixture when ambient air temperature is less than that indicated in the Table nor when the surface is wet or frozen.

Lift Thickness	Min. Air Temperature, Degrees F.
1" or Less	55
1.1" to 2"	45
2.1" to 3"	40
3.1" to 4.5"	35

- B. Mixture shall be delivered to the spreader at a temperature between 250 degrees F and 325 degrees F.

1.6 GUARANTEE

- A. Contractor shall guarantee the quality of materials, equipment, and workmanship for a period of 12 months after acceptance. Defects discovered during this period shall be repaired by the Contractor at no cost to the Owner.

1.7 TESTING

- A. Testing laboratory shall operate in accordance with ASTM D 3740 and E 329 and be acceptable to the Engineer.
- B. Testing laboratory and Project Engineer/Project Representative shall be given a minimum of 48 hours notice prior to taking any tests.
- C. Owner shall select and engage the testing laboratory. Testing laboratory shall be responsible to the Owner and Owner's Engineer. Payment for laboratory and all tests shall be by the Owner, except Owner specifically reserves the right to deduct from Contractor's payment, expenses and charges of testing laboratory when:
 - 1. Contractor gives notice the work is ready for inspection and testing, and fails to be ready for the test, and/or
 - 2. Testing of the Contractor's work, products or materials fail, and retesting is required, and/or
 - 3. Contractor abuses the services or interferes with the work of the testing laboratory in the conduct of this work.

- D. Test results shall be furnished to the Engineer prior to continuing with associated or subsequent work.

PART 2 – PRODUCTS

2.1 TACK COAT

- A. Shall consist of asphalt binder (asphalt cement) or emulsified asphalt, conforming to Section 401 of the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction. Asphalt binder shall be PG64–22. The acceptable grades of emulsified asphalt are RS–1, MS–1, MS–2, HFMS–1, HFMS–2, SS–1, CRS–1, CRS–2, CMS–2, and CSS–1.

2.2 ASPHALT BINDER AND ADDITIVES

- A. Shall be PG64–22 and conform to Section 401 of the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction.
- B. Anti–Stripping: Shall conform to requirements of Section 401 of the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction.

2.3 AGGREGATES

- A. General: Mineral aggregate shall be composed of fine aggregate or a combination of fine and coarse aggregate. Coarse aggregate shall be that portion of the material retained on a No. 4 sieve.

Fine aggregate shall be considered that portion passing the No. 4 sieve. Fine aggregate, coarse aggregate, and any additives in combination with the specified percentage of asphalt cement shall meet the requirements of tests specified, before acceptance may be given for their individual use. Marine (Fossiliferous) limestone shall not be used.

- B. Fine Aggregate: Shall conform to the requirements of Section 401 of the South Carolina Department of Transportation Standard Specifications for Highway Construction.
- C. Coarse Aggregate: Shall be granite stone and conform to the requirements of Section 401 of the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction.
- D. Surface Course: The surface course shall consist of fine and coarse aggregate and mineral filler uniformly mixed with hot asphalt binder in an acceptable mixing plant. The plant shall conform to South Carolina Department of Transportation

2007 Standard Specifications for Highway Construction. The gradations, asphalt content and air voids shall be the following:

TYPE C	
Square Sieve	% Passing
3/4 inch	100
1/2 inch	97 – 100
3/8 inch	83 – 100
No. 4	58 – 80
No. 8	42 – 62
No. 30	20 – 40
No. 100	8 – 20
No. 200	3 – 9
% Asphalt Binder	5.0 – 6.8
Air Voids, %	3.5 – 4.5

- E. Intermediate or Binder Course: The mineral aggregates and asphalt binder shall be combined in such proportions the composition by weight of the finished mixture shall be within the following range limits:

2.4 SOURCE QUALITY CONTROL AND TESTS

- A. Section 01 45 00 – Quality Control and Section 01 45 23 – Testing and Inspecting Services.
- B. Submit proposed mix design for review prior to beginning of work.
- C. Test samples in accordance with the requirements of these specifications.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. On-Site Observations: Owner’s Representative or Engineer will have the right to require any portion of work be completed in their presence. If work is covered up after such instruction, it shall be exposed by the Contractor for observation at no additional cost to Owner. However, if Contractor notifies Engineer such work is scheduled, and Engineer fails to appear within 48 hours, the Contractor may proceed. All work completed and materials furnished shall be subject to review by the Engineer or Project Representative. Improper work shall be reconstructed. All materials, which do not conform to requirements of specifications, shall be removed from the work upon notice being received from Engineer for rejection of such materials. Engineer shall have the right to mark rejected materials to distinguish them as such.

Contractor shall give the Owner, Project Engineer or Project Representative a minimum of 48 hours notice for all required observations or tests.

- B. Contractor shall verify base has been tested, is dry, and slopes and elevations are correct.

3.2 PREPARATION

- A. Apply tack coat in accordance with Section 401 of the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction. Rate of application shall be 0.05 to 0.15 gallons per square yard of surface.
- B. Work shall be planned so no more tack coat than is necessary for the day's operation is placed on the surface. All traffic not essential to the work should be kept off the tack coat.
- C. Apply tack coat to contact surfaces of curbs and gutters. Apply in manner so exposed curb or gutter surfaces are not stained.
- D. Coat surfaces of manhole frames and inlet frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.3 PLACEMENT

- A. Construction shall be in accordance with Sections 401, 402, and 403 of the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction.
- B. Asphaltic concrete shall not be placed on a wet or frozen surface.
- C. Compaction shall commence as soon as possible after the mixture has been spread to the desired thickness. Compaction shall be continuous and uniform over the entire surface. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks. Compaction rolling shall be complete before material temperature drops below 175° F.
- D. Areas of pavement with deficient thickness or density shall be removed and replaced at no additional cost to the Owner.

3.4 TOLERANCES

- A. General: All paving shall be subject to visual and straightedge evaluation during construction operations and thereafter prior to final acceptance. A 10-foot straightedge shall be maintained in the vicinity of the paving operation at all times

for the purpose of measuring surface irregularities on all paving courses. The straightedge and labor for its use shall be provided by the Contractor. The surface of all courses shall be checked with the straightedge as necessary to detect surface irregularities. Irregularities such as rippling, tearing or pulling, which in the judgment of the Engineer indicate a continuing problem in equipment, mixture or operating technique, will not be permitted to recur. The paving operation shall be stopped until appropriate steps are taken by the Contractor to correct the problem.

- B. Flatness: All irregularities in excess of 1/8 inch in 10 feet for surface courses and 1/4 inch in 10 feet for intermediate courses shall be corrected.
- C. Variation from Design Elevation:
 - 1. General Paving: Less than 1/4 inch.
 - 2. Accessible Routes: Shall not exceed 1/4 inch. However, accessible routes shall not exceed maximum ADA allowable slopes. Contractor shall remove and replace any and all portions of the accessible route that exceed maximum ADA allowable slopes.
- D. Scheduled Compacted Thickness: Within 1/4 inch per lift.
- E. Pavement Deficient in Thickness: When measurement of any core indicates the pavement is deficient in thickness, additional cores will be drilled 10 feet either side of the deficient core along the centerline of the lane until the cores indicate the thickness conforms to the above specified requirements. A core indicating thickness deficiencies is considered a failed test. Pavement deficient in thickness shall be removed and replaced with the appropriate thickness of materials. If the Contractor believes the cores and measurements taken are not sufficient to indicate fairly the actual thickness of the pavement, additional cores and measurements will be taken, provided the Contractor will bear the extra cost of drilling the cores and filling the holes in the roadway as directed.

3.5 FIELD QUALITY CONTROL

- A. Acceptance of the in-place density of the binder and surface courses shall be in accordance with the South Carolina Department of Transportation 2007 Standard Specifications for Highway Construction.
- B. Density Testing: Performed in accordance with ASTM D-2726 and ASTM D-2950. Core samples for each day's operation shall be taken, tested and results reported to the Engineer the following day. The areas sampled shall be properly restored by the Contractor at no additional cost to the Owner. Nuclear gauge tests shall be taken during the asphaltic concrete placement.

1. The pavement core and nuclear gauge densities shall range between 94% and 96% of the theoretical maximum laboratory density.

C. Temperature:

1. Asphaltic concrete shall not exceed 325 degrees F at any time.
2. Asphaltic concrete shall not be placed once the temperature of the mix falls below 250 degrees F or the delivered temperature is more than 15 degrees F below the batch plant's delivery ticket.
3. Temperature at time of loading shall be recorded on the truck delivery ticket.

D. Frequency of Tests:

1. Asphaltic Concrete – One test for each 250 tons placed.
 - a. Asphalt extraction and gradation test.
 - b. Core Sample
2. Field determination of density by nuclear method every 5,000 square feet during construction of the asphaltic concrete binder/surface course.

END OF SECTION

SECTION 321313 - CONCRETE PAVING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Curbs and gutters.
2. Walks.

B. Description

1. Work included: Provide cast-in-place concrete, including formwork, for curbs and gutters and walks where shown on the Drawings and Details, as specified herein, and as needed for a complete and proper installation.

C. Related Sections:

1. Section 033000 "Cast-in-Place Concrete" for applications of concrete for drainage structures and flumes.

1.3 SUBMITTALS

- A. Within 15 calendar days after receiving the Owner's Notice to Proceed, submit proposed mix designs for approval.

1. Proportions shall be determined by means of laboratory tests of concrete made with the cement and aggregate proposed for use.
2. Provide report in detail from an approved testing laboratory showing 7-day and 28-day strengths obtained using materials proposed.
3. Required average strength above specified strength:
 - a. Determinations of required average strength above specified strength (f_c) shall be in accordance with ACI 318 and ACI 301.
4. Cost of this work shall be borne by the Contractor.

- B. Manufacturer's data: Submit manufacturer's specification with application instructions for proprietary materials and items, including curing compound, form release agents, admixtures, patching compounds, and others as required by the Engineer.

1.4 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. Reference standards: Comply with the following codes, specifications and standards, except as otherwise shown or specified:
 - 1. American Concrete Institute (ACI) Publications:
 - a. ACI 305 Recommended Practice for Hot Weather Concreting
 - b. ACI 306 Recommended Practice for Cold Weather Concreting
 - 2. American Society for Testing and Materials (ASTM) Publications:
 - a. A 185 Welded Steel Wire Fabric for Concrete Reinforcement
 - b. C 31 Making and Curing Concrete Test Specimens in the Field
 - c. C 33 Concrete Aggregates
 - d. C 39-72 Compressive Strength of Cylindrical Concrete Specimens
 - e. C 94 Ready-Mixed Concrete
 - f. C 150 Portland Cement
 - g. C 260 Air-Entraining Admixtures for Concrete
- C. Testing agency: A testing laboratory will be retained by the Owner to perform material evaluation tests required by these specifications.
- D. Qualifications of contractors performing concrete work: Minimum of two (2) years experience on comparable concrete projects.
- E. Plant qualification: Plant equipment and facilities shall meet all requirements of the Check List for Certification of Ready Mixed Concrete Production Facilities of the National Ready Mixed Concrete Association and ASTM C 94.

PART 2 PRODUCTS

2.1 FORMS

- A. Use form materials conforming to ACI 347.
- B. Form coatings: Form release coating shall be neat oil with surface wetting agent or chemical release agent which effectively prevents absorption of moisture, prevents bonding with concrete, is non-staining to concrete and leaves the concrete with a paintable surface.
 - 1. On surfaces to receive an applied coating, use a residual free chemical form release agent that is compatible with the applied coating and will not prevent the applied finish from satisfactorily bonding to the concrete.

2.2 SIDEWALK REINFORCEMENT

- A. Fiber reinforcing:
 - 1. Use fiber reinforcing where indicated on the drawings.
 - 2. Provide polypropylene or co-polymer fibers as manufactured by High Tech Fibers, Inc., Fibermesh Company or an approved equal.
 - 3. Where required, use fiber reinforcing at a rate of 2.0 lbs. per cubic yard unless another rate is indicated on the drawings.
- B. Provide welded wire mesh for sidewalk reinforcement where indicated on drawings in compliance with ASTM A 185.

2.3 PREMOLDED JOINT FILLERS

- A. In concrete pavements (exterior) and concrete sidewalks, use self-expanding cork joint fillers complying with ASTM 1752, Type III.

2.4 CONCRETE MATERIALS

- A. Cement: Use portland cement: ASTM C 150, Type I, Type I-P or Type II, low alkali.
- B. Aggregates:
 - 1. Fine aggregate: Conform to ASTM C 33.
 - 2. Coarse aggregate: Conform to ASTM C 33, Size #57.
- C. Water: Clean and potable and free from injurious amounts of deleterious materials.
- D. Admixtures:
 - 1. Air entraining admixture: ASTM C 260.
 - 2. Water reducing, set controlling admixture: Conform to ASTM C 494.
 - a. Type A - water reducing.
 - b. Type D - water reducing and retarding.

3. Do not use admixtures containing calcium chloride.

E. Curing compounds:

1. On all vertical and formed surfaces and construction joints, use a non-residual, non-staining curing compound conforming to ASTM C 309 Type 1 and 1D. Acceptable products are:
 - a. L&M Cure by L&M Construction Chemicals, Inc.
 - b. Horn WB-75 by A.C. Horn Company.
 - c. Sonosil by Sonneborn, Inc.
 - d. Approved equal.

2.5 CONCRETE MIXTURES

A. Provide concrete with the compressive strength of 3000 psi for a 28-day strength as minimum:

1. Entrained air: 3000 psi concrete, 5% \pm 1%.
2. Slump: 3000 psi concrete, 4" \pm 1".

B. Production of concrete:

1. General: Concrete shall be ready mixed and shall be batched, mixed and transported in accordance with ASTM C 94 except as otherwise indicated.
2. Monitor time and mix proportions by plant delivery slips.
3. Air-entraining admixtures: Add air-entraining admixture into the mixture as a solution and measure by means of an approved mechanical dispensing device.
4. Water reducing and retarding admixture: Add water reducing and retarding admixture and measure as recommended by the manufacturer.
5. Addition of water to the mix upon arrival at the job site shall not exceed that necessary to compensate for a 1" loss in slump, nor shall the design maximum water-cement ratio be exceeded. Water shall not be added to the batch at any later time.
6. Weather conditions: Control temperature of mix as required by ACI 306 "Cold Weather Concreting" and by ACI 305 "Hot Weather Concreting".

PART 3 EXECUTION

3.1 SURFACE CONDITIONS

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
- B. Water, mud, organic, and other detrimental material shall be removed from excavations before concrete is deposited.
- C. Notify the Engineer prior to placing concrete and place no concrete until the formwork, reinforcing and embedded items have been inspected by the Engineer.

3.2 FORMWORK

A. General:

- 1. Construct forms in conformance with ACI 347.
- 2. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement.
- 3. Coat form contact surfaces with approved form coating compound prior to placing reinforcing steel.

B. Formwork reuse: Reuse only forms that are in good condition and which maintain a uniform surface texture on exposed concrete surfaces.

- 1. Apply a light sanding as necessary to obtain a uniform texture.

C. Removal of forms:

- 1. Do not disturb or remove forms until the concrete has hardened sufficiently to permit form removal with complete safety.
- 2. Exercise care in removing forms from finished concrete surfaces so that surfaces are not marred or gouged and that corners are true, sharp and unbroken.
- 3. Whenever the formwork is removed during the curing period, continue to cure the exposed concrete by one of the methods specified herein.

3.3 JOINTS

A. General: The contractor shall construct expansion and contraction (also referred to as score and control) joints as shown on the construction drawings and details.

B. Contraction joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

- 1. Unless otherwise approved by the Engineer, provide construction joints every ten (10) feet, or as shown on the drawings.

2. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes.
3. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

C. Expansion joints:

1. Provide 1/2" expansion joints with premolded joint filters every thirty (30) feet.

3.4 CONCRETE PLACEMENT

A. Preparation:

1. Remove foreign matter accumulated in the forms.
2. Rigidly close openings left in the formwork.
3. Wet wood forms sufficiently to tighten up cracks. Wet other material sufficiently to maintain workability of the concrete.
4. Use only clean tools.
5. Provide and maintain sufficient tools and equipment on hand to facilitate uninterrupted placement of the concrete.
6. Before commencing concrete, inspect and complete installation of formwork and wire mesh.

B. Conveying:

1. Transport and handle concrete from the truck to the place of final deposit as rapidly as practicable by methods which will prevent segregation or loss of ingredients to maintain the quality of the concrete.
2. Provide equipment for lifting, dumping, chuting, pumping or conveying the concrete, of such size and design as to ensure a practically continuous flow of concrete at the delivery and without separation of materials.
3. Do not use concrete that is not placed within 1½ hours after water is first introduced into the mix unless the slump is such that it meets the specified limits without the addition of water to the batch.

C. Placing:

1. Deposit concrete as nearly as practicable in its final location so as to avoid separation due to rehandling and flowing.

2. Place concrete at such a manner that concrete upon which fresh concrete is deposited is still plastic.
- D. Hot weather placement: Place concrete in hot weather in accordance with ACI 305 "Hot Weather Concreting" and as specified herein.
1. Do not place concrete whose temperature exceeds 100°F.
 2. Thoroughly wet forms and reinforcing prior to placement of concrete.
 3. Use additional set retarder as necessary to increase set time.
 4. Start curing as soon as the concrete is sufficiently hard to permit without damage.
- E. Cold weather placement: Place concrete in cold weather in accordance with ACI 306 and as specified herein.
1. Do not place concrete when the atmospheric temperature is below 40°F.
 2. Do not add salts, chemicals, or other materials to the concrete mix to lower the freezing point of the concrete.
- F. Consolidation:
1. Consolidate each layer of concrete immediately after placing, by use of internal concrete vibrators supplemented by hand spading, rodding, or tamping.
 - a. Use vibrators having a 2" head diameter and a minimum frequency of 8000 vibrations per second.
 - b. Provide sufficient number of vibrators to properly consolidate the concrete, keeping up with placement operations.
 - c. Provide at least one spare vibrator on site.
 2. Insert and withdraw vibrators at points approximately 18" apart.
 3. Do not vibrate forms.
 4. Do not use vibrators to transport concrete inside the forms.

3.5 CONCRETE FINISHING

- A. Finish schedule: Unless otherwise indicated on the drawings, finish all concrete surfaces in accordance with the following schedule:
1. Form finish: Formed surfaces not ordinarily exposed to view, including the underside of slabs not exposed to view.
 2. Broom finish: Exterior, outdoor slabs exposed to view including:
 - a. Sidewalks and concrete pavements.

B. Finishing procedures:

1. Form finish:

- a. Repair defective concrete.
- b. Fill depressions deeper than 1/4".
- c. Fill tie holes.
- d. Remove fins exceeding 1/8" in height.

2. Broom finish:

- a. All sidewalks shall have a light broom finish. No edge finish "picture framing" is allowed.
- b. Float finish as specified herein.
- c. Provide a scored texture by drawing a broom across the surface.

3.6 CURING

A. Beginning immediately after placement, protect concrete from premature drying, excessively hot and cold temperatures and mechanical injury. Concrete shall be protected for a minimum of 7 days.

B. Curing compound: Apply curing compound immediately after completion of the finish on unformed surfaces and within two hours after removal of forms on formed surfaces.

- 1. Spray the entire surface with two coats of liquid curing compound, applying the second coat in the direction of 90° to the first coat.
- 2. Apply compound in accordance with the manufacturer's instructions to cover the surface with a uniform film that will seal thoroughly

3.7 FIELD QUALITY CONTROL

A. Concrete cylinder tests:

- 1. During construction, prepare test cylinders for compressive strength testing, using 6" diameter by 12" long single use molds, complying with ASTM C 31.
 - a. Make a set of three test cylinders from each pour.
 - b. Identify each and tag cylinder as to date of pour and location of concrete which it represents.
 - c. Deliver cylinders to testing lab selected by the Owner.

- d. Cost for preparation and delivery of cylinders shall be borne by the Contractor. Cost for testing cylinders will be borne by the Owner.
2. Should strengths shown by test cylinders fail to meet specified strengths for the concrete represented, then:
 - a. Engineer shall have the right to require changes in the mix proportions as he deems necessary on the remainder of the work.
 - b. Additional curing of those portions of the structure represented by the failed test cylinders shall be accomplished as directed by the Engineer.
 - c. Upon failure of the additional curing to bring the concrete up to specified strength requirements, strengthening or replacement of those portions of the structure shall be as directed by the Engineer.
 - d. The Engineer may require additional testing of concrete in question by either non-destructive methods such as the Swiss Hammer, Windsor Probe or Ultrasonics or by coring and testing the concrete in question in accordance with ASTM C 42. Such testing shall be performed at no additional cost to the Owner.
- B. Other field concrete tests:
 1. Slump tests: Either the Engineer or a testing laboratory representative will make slump tests of concrete as it is discharged from the mixer.
 - a. Slump test may be made on any concrete batch at the discretion of the Engineer.
 - b. Failure to meet specified slump requirements will be cause for rejection of the concrete.
 2. Temperature: The concrete temperature may be checked at the discretion of the Engineer.
 3. Entrained air: Air content of the concrete will be checked by a representative of the testing laboratory at the discretion of the Engineer.
- C. Coordination of laboratory services: The Contractor shall be responsible for coordination of laboratory services.
 1. Maintain a log recording quantities of each type of concrete placed, date and location of pour.
 2. Inform the testing laboratory of locations and dates of concrete placement and other information as required to be identified in the laboratory's test reports.
- D. Tests required because of extensive honeycombing, poor consolidation of the concrete or any suspected deficiency in the concrete will be paid for by the Contractor.

- E. Dimensional tolerances for allowable variations from dimensions or locations of concrete work, including the locations of embedded items shall be as given in ACI 301.
- F. Concrete which fails to meet strength requirements, dimensional tolerances, watertightness criteria, or is otherwise deficient due to insufficient curing, improper consolidation or physical damage shall be replaced or repaired as instructed by the Engineer at no expense to the Owner.

3.8 PROTECTION

- A. Completed concrete shall be protected from damage until accepted. The Contractor shall repair damaged concrete and clean concrete discolored during construction. Concrete that is damaged shall be removed and reconstructed for the entire length between regularly scheduled joints. Refinishing the damaged portion will not be acceptable. Removed damaged portions shall be disposed of offsite at the expense of the Contractor and per local regulations.

END OF SECTION

SECTION 323113 - CHAIN LINK FENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Chain-link fences.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
 - a. Fence and gate posts, rails, and fittings.
 - b. Chain-link fabric, reinforcements, and attachments.

- B. Shop Drawings: For each type of fence and gate assembly.

- 1. Include plans, elevations, sections, details, and attachments to other work.

- C. Samples for Initial Selection: For each type of factory-applied finish.

- D. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:

- 1. Polymer-Coated Components, if required on drawings: In 6-inch lengths for components and on full-sized units for accessories.

- E. Delegated-Design Submittal: For structural performance of chain-link fence and gate frameworks, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For **factory-authorized service representative**.

- B. Product Certificates: For each type of chain-link fence.

- C. Product Test Reports: For framework strength according to ASTM F 1043, for tests performed by **manufacturer and witnessed by a qualified testing agency or a qualified testing agency**.

- D. Field quality-control reports.
- E. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For gate operators to include in emergency, operation, and maintenance manuals.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing fence grounding; member company of NETA or an NRTL.
 - 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.
- B. Emergency Access Requirements: According to requirements of authorities having jurisdiction for gates with automatic gate operators serving as a required means of access.

1.7 FIELD CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.8 WARRANTY

- A. Special Warranty: **Installer agrees** to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Failure to comply with performance requirements.
 - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - c. Faulty operation of gate operators and controls.
 - 2. Warranty Period: **Five** years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design chain-link fence and gate frameworks.

- B. Structural Performance: Chain-link fence and gate frameworks shall withstand the design wind loads and stresses for fence height(s) and under exposure conditions indicated according to **ASCE/SEI 7**
 - 1. Design Wind Load: Per manufacturer's recommendations.
 - a. Minimum Post Size: Determine according to ASTM F 1043 for post spacing not to exceed **10 feet** for Material **Group IA, ASTM F 1043, Schedule 40 steel pipe**
 - b. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified.
- C. Lightning Protection System: Maximum resistance-to-ground value of 25 ohms at each grounding location along fence under normal dry conditions.

2.2 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
 - 1. Fabric Height: [**As indicated on Drawings**].
 - 2. Steel Wire for Fabric: Wire diameter of **9 gauge**.
 - a. Mesh Size: **2 inches**
 - b. Zinc-Coated Fabric: ASTM A 392, Type II, [**Class 1, 1.2 oz./sq. ft. (366 g/sq. m)**] [**Class 2, 2.0 oz./sq. ft. (610 g/sq. m)**] with zinc coating applied [**after**] weaving.
 - 1) Galvanized
 - c. Coat selvage ends of metallic-coated fabric before the weaving process with manufacturer's standard clear protective coating.
 - 3. Selvage: **Knuckled at both selvages**

2.3 FENCE FRAMEWORK

- A. Posts and Rails: ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 based on the following:
 - 1. Fence Height: **72 inches or as indicated on Drawings**.
 - 2. Light-Industrial-Strength Material: **Group IC-L, round steel pipe, electric-resistance-welded pipe**.
 - a. Line Post: **2.375 inches in diameter**.

- b. End, Corner, and Pull Posts: **2.875 inches** .
- 3. Horizontal Framework Members: **Top and bottom** rails according to ASTM F 1043.
 - a. Top Rail: **1.66 inches in diameter**
- 4. Brace Rails: ASTM F 1043.
- 5. Metallic Coating for Steel Framing:
 - a. Type A zinc coating.
 - b. Type B zinc with organic overcoat.
 - c. External, Type B zinc with organic overcoat and internal, Type D zinc-pigmented coating.
 - d. Type C, Zn-5-Al-MM alloy coating.
 - e. Coatings: Any coating above.

2.4 TENSION WIRE

- A. Metallic-Coated Steel Wire: 0.177-inch- (4.5-mm-) diameter, marcelled tension wire according to ASTM A 817 or ASTM A 824, with the following metallic coating:
 - 1. Type II: Zinc coated (galvanized) by [**hot-dip**] [**electrolytic**] process, with the following minimum coating weight:
 - a. Class 3: Not less than 0.8 oz./sq. ft. (244 g/sq. m) of uncoated wire surface.
 - b. Class 4: Not less than 1.2 oz./sq. ft. (366 g/sq. m) of uncoated wire surface.
 - c. Class 5: Not less than 2 oz./sq. ft. (610 g/sq. m) of uncoated wire surface.
 - d. Matching chain-link fabric coating weight.

2.5 INDUSTRIAL SWING GATES

- A. General: Comply with ASTM F 900.
- B. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1083 and ASTM F 1043 for materials and protective coatings.
- C. Frames and Bracing: Fabricate members from round tubing with outside dimension and weight according to ASTM F 900 for the following gate fabric height:

1. Gate Fabric Height: per gate size noted on drawings.
- D. Frame Corner Construction: Welded.
- E. Gate Posts: Fabricate members from round galvanized steel pipe with outside dimension and weight according to ASTM F 900 for gate fabric heights and leaf widths as shown on drawings.
- F. Hardware: Latches permitting operation from both sides of gate, hinges, gate stops and, for each gate leaf more than 5 feet wide, keepers. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate.
1. Owner furnished padlocks.

2.6 FITTINGS

- A. General: Provide fittings for a complete fence installation, including special fittings for corners. Comply with ASTM F 626.
- B. Post and Line Caps: Hot-dip galvanized pressed steel or hot-dip galvanized cast iron. Provide weathertight closure cap for each post.
- C. Rail and Brace Ends: Hot-dip galvanized pressed steel or hot-dip galvanized cast iron. Provide rail ends or other means for attaching rails securely to each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
1. Top Rail Sleeves: Hot-dip galvanized pressed steel or round steel tubing. Not less than 6 inches long.
- E. Tension and Brace Bands: Hot-dip galvanized pressed steel.
- F. Tie Wires, Clips, and Fasteners: Provide the following types according to ASTM F 626:
1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
 - a. Hot-Dip Galvanized Steel: 0.106-inch- diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.

2. Round Wire Hog Rings: Hot-dip galvanized steel or aluminum for attaching chain-link fabric to horizontal tension wires.
- G. Pipe Sleeves: For posts set into concrete, provide preset hot-dip galvanized steel pipe sleeves complying with ASTM A 53, not less than 6 inches long with inside dimensions not less than 1/2 inch more than outside dimension of post, and flat steel plate forming bottom closure.

2.7 GROUT AND ANCHORING CEMENT

- A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.
- B. Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with water at Project site to create pourable anchoring, patching, and grouting compound. Provide formulation that is resistant to erosion from water exposure without needing protection by a sealer or waterproof coating, and that is recommended in writing by manufacturer for exterior applications.

2.8 GROUNDING MATERIALS

- A. Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Connectors and Grounding Rods: Listed and labeled for complying with UL 467.
 1. Connectors for Below-Grade Use: Exothermic welded type.
 2. Grounding Rods: Copper-clad steel, 5/8 by 96 inches

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for **a certified survey of property lines and legal boundaries**, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
 1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 CHAIN-LINK FENCE INSTALLATION

- A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.
 - 1. Install fencing on established boundary lines inside property line.
- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- C. Post Setting: Set posts **in concrete** at indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Concealed Concrete: Place top of concrete **2 inches** below grade to allow covering with surface material.
- D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment **30 degrees or more**. For runs exceeding 500 feet, space pull posts an equal distance between corner or end posts.
- E. Line Posts: Space line posts uniformly at **10 feet** o.c.
- F. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
 - 1. Locate horizontal braces at midheight of fabric 72 inches or higher, on fences with top rail, and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- G. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:
 - 1. Extended along **bottom** of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.
- H. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to

receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

- I. Intermediate and Bottom Rails: Secure to posts with fittings.
- J. Chain-Link Fabric: Apply fabric to **outside** of enclosing framework. Leave **2-inch** bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- K. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.
- L. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
 - 1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.
- M. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side.

3.4 GROUNDING AND BONDING

- A. Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."
- B. Fence Grounding:
 - 1. Ground for fence and fence posts shall be a separate system from ground for gate and gate posts.
 - 2. Install ground rods and connections at maximum intervals of **1500 feet** .
 - 3. Fences within 100 Feet of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of **750 feet**.
 - 4. Ground fence on each side of gates and other fence openings.
 - a. Bond metal gates to gate posts.
 - b. Bond across openings, with and without gates, except openings indicated as intentional fence discontinuities. Use No. 2 AWG wire and bury it at least 18 inches below finished grade.
- C. Protection at Crossings of Overhead Electrical Power Lines: Ground fence at location of crossing and at a ground rod located a maximum distance of 150 feet on each side of crossing.

- D. Fences Enclosing Electrical Power Distribution Equipment: Ground according to IEEE C2 unless otherwise indicated.
- E. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.
- F. Connections:
 - 1. Make connections with clean, bare metal at points of contact.
 - 2. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - 3. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
 - 4. Make above-grade ground connections with mechanical fasteners.
 - 5. Make below-grade ground connections with exothermic welds.
 - 6. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.
- G. Bonding to Lightning Protection System: Ground fence and bond fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor according to NFPA 780.
- H. Comply with requirements in Section 264113 "Lightning Protection for Structures."

3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain chain-link fences and gates.

END OF SECTION 323113

SECTION 328400- IRRIGATION

1 - GENERAL

1.1 PURPOSE OF SPECIFICATIONS

- A. The purpose of these specifications is to provide the Contractor with sufficient information which will allow the Contractor to design and install the irrigation system (the Project) in an efficient, timely and satisfactory manner in accordance with the highest standards of workmanship for commercial irrigation system installation so that the completed system shall effectively and efficiently irrigate all required areas, be complete in every respect, and operate to the satisfaction of Owner.

1.2 SCOPE OF WORK

- A. The Work covered by these specifications shall include furnishing of all supervision, labor, materials, tools, and equipment necessary to perform and complete the installation of the Project specified herein and as shown on the drawings and any incidental work not shown or specified which can reasonably be determined to be part of the Work and necessary to provide a complete and functional system.
- B. Contractor shall procure and maintain in full force and effect all necessary or required permits, and shall pay or discharge, prior to the completion of the Project, all mechanics' liens, all federal, state, and local taxes and any other costs associated or incidental to the Project, whether or not foreseeable at the time of or during construction.
- C. No deviation from these specifications or Agreement shall be made without the prior written authorization of the Owner or his representative.

1.3 SUMMARY

- A. Section Includes:
 - 1. Piping.
 - 2. Encasement for piping.
 - 3. Manual valves.
 - 4. Pressure-reducing valves.
 - 5. Automatic control valves.
 - 6. Automatic drain valves.
 - 7. Transition fittings.
 - 8. Dielectric fittings.

9. Miscellaneous piping specialties.
10. Sprinklers.
11. Quick couplers.
12. Drip irrigation specialties.
13. Controllers.
14. Boxes for automatic control valves.

1.4 DEFINITION AND INTENT OF DOCUMENTS

- A. The "Contract Documents" consist of the Agreement, drawings, and the written specifications, including all modifications agreed to by the parties at any time during the construction period. They are complimentary and shall be interpreted as a whole in accordance with the laws of the State in which the contract is executed.

1.5 EXAMINATION AND VERIFICATION OF DRAWINGS AND SITE

- A. When furnished, Manufacturers' directions, specifications, and detailed drawings shall be followed in all cases with regard to points not shown in the "Contract Documents". Contractor shall inform the Owner of any discrepancies between manufacturers' directions and the "Contract Documents" and such discrepancies shall be resolved in writing by the Owner, before work is done in connection therewith.
- B. Prior to commencing work on the Project, Contractor shall carefully check and verify all field conditions and shall make a written report to the Owner of any discrepancy or variation from those shown on the plans, and such discrepancy or variation shall be resolved by the Owner before any work with regard thereto is commenced. If installed equipment requires replacement or reinstallation as a result of any unresolved discrepancy or variation, it shall be at the Contractor's expense.
- C. Contractor shall be responsible for verifying the location of all existing utilities above and below ground, including but not limited to conduits, gas lines, water and sewer lines, sprinkler lines, and electric, telephone and TV cables, etc., prior to commencing any construction.
- D. Owner shall provide to Contractor all available information consisting of drawings, sketches, and observations to help the Contractor locate existing utilities. Contractor is responsible for all repairs resulting from damage to said utilities, regardless of the advice and assistance of Owner.

1.6 OWNER'S AUTHORIZED REPRESENTATIVE

- A. Owner shall appoint a representative to work with Contractor, who shall have full authority to make field changes deemed necessary, approve work performed by Contractor and approve Contractor's requests for payment. Contractor shall be kept advised, in writing, of the current such representative's name, address and telephone number. Whenever the Owner's action is required under the "Contract Documents", action by said representative shall be deemed the action of the Owner.

1.7 REGULATIONS, PERMITS, FEES, AND INSPECTIONS

- A. Contractor shall procure and pay for all temporary permits and licenses necessary to the prosecution and completion of the work.
- B. Permits, licenses, and easements for permanent structures or permanent changes to existing facilities shall be procured by and paid for by Owner, unless otherwise specified.
- C. Local, municipal, state, and federal laws, ordinances, rules and regulations governing or relating to any portion of the Project are hereby incorporated into and made part of these specifications and nothing contained herein shall be construed or interpreted to conflict therewith. However, when these specifications call for or describe materials, workmanship, or construction of a better quality, higher standard, or larger size than is required thereby, the provisions of the specifications shall take precedence.
- D. If Contractor observes any conflict with said laws, ordinances, rules or regulations, it shall promptly give Owner written notification thereof, and Owner shall thereupon resolve such conflict. If Contractor performs any work knowing it to be contrary to such laws, ordinances, rules and regulations, without notice to and consent by Owner, it shall be liable for all costs arising therefrom, including but not limited to the change and correction thereof.
- E. In all cases where inspection of the irrigation system work is required or where portions of the work are specified to be performed under the direction of Owner, Contractor shall notify the Owner at least 72 hours prior to the time when such inspection and/or direction is required. Any necessary re-excavation or change to the system occasioned by the failure of Contractor to give the required notification shall be performed at Contractor's expense.

1.8 GUARANTY - WARRANTY

- A. Contractor warrants and guarantees that for a period of one (1) year from the date of final completion and acceptance of its work hereunder, all work performed by it under this contract shall be free from any defects in

workmanship and materials and agrees, at its own expense, to repair and/or replace any defective work and materials and all other work damaged thereby which become defective during the term of the guaranty-warranty in an expeditious manner.

- B. Owner retains the right to make emergency repairs without relieving Contractor's guaranty obligation. In the event Contractor does not respond to Owner's request for repair work under this guaranty-warranty within a period of forty-eight hours, Owner may make such repairs as he deems necessary at the full expense of Contractor.
- C. Any settling of backfilled trenches that may occur during the guaranty-warranty period shall be repaired by Contractor at no additional expense to Owner, including the complete restoration of all plantings, paving, or other improvements of any kind, damaged as a result thereof.

1.9 PROTECTION OF WORK AND PROPERTY

- A. Contractor shall be liable for any damage resulting from its operations, to existing buildings, equipment, piping, pipe coverings, electrical systems, sewers, sidewalks, roads, grounds, landscaping, or structure of any kind, occurring during the course of its work, whether through negligence or otherwise. Such damaged property shall be replaced or repaired by Contractor at its own expense in a manner satisfactory to Owner, which repair or replacement shall be a condition precedent to Owner's obligation to make final payment under the Contract.
- B. Contractor shall be responsible for damage to any work, completed or otherwise covered by this specification before final acceptance of the work. Contractor shall securely cover all openings into the system (i.e. unfinished pipelines) and cover all apparatus, equipment, and appliances, both before and after being set in place to prevent obstructions in the pipes and the breakage, misuse, or disfigurement of the apparatus, equipment, or appliance.
- C. Contractor shall adequately protect adjacent property as provided by law and the Contract Documents.

1.10 PERFORMANCE REQUIREMENTS

- A. Irrigation zone control shall be automatic operation with controller and automatic control valves.
- B. Location of Sprinklers and Specialties: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs

and light standards. Maintain 100 percent irrigation (head to head) coverage of areas indicated. Lawn areas shall be pop-up sprinklers and tree, shrub and ground cover areas shall be drip tubing irrigation.

- C. Minimum Working Pressures: The following are minimum pressure requirements for piping, valves, and specialties unless otherwise indicated:
 - 1. Irrigation Main Piping: 160 psig.
 - 2. Circuit Piping: 160 psig.

1.11 SUBMITTALS

- A. Contractor shall furnish irrigation design to owner for review and approval prior to installation.
- B. Within seven calendar days of the award of the contract, Contractor shall submit to Owner three copies of a materials list complete with manufacturers' names, and model numbers covering all material to be furnished under these specifications with three copies of descriptive literature on all items listed on the material list. Items to be covered are as follows.
 - 1. pipe;
 - 2. solvent welded and ring gasket joint fittings;
 - 3. brass and bronze fittings;
 - 4. gate valves;
 - 5. valve boxes;
 - 6. sprinklers;
 - 7. remote control valves;
 - 8. wire and connectors;
 - 9. pump and controls.
- C. Qualification Data: For qualified Installer.
- D. Zoning Chart: Show each irrigation zone and its control valve.
- E. Controller Timing Schedule: Indicate timing settings for each automatic controller zone.
- F. Field quality-control reports.
- G. All materials shall be those specified herein and approved by Owner. Substitutions must be approved in writing by Owner. No work shall be commenced prior to such approval.
- H. Contractor shall furnish the Owner with two individually bound manuals detailing operation and maintenance requirements for all components installed in the

irrigation system. Each manual shall include the following items:

1. index sheet stating Contractor's name, address, and telephone number;
 2. duration and calendar dates of warranty period;
 3. materials list including manufacturers' names, make and model numbers, name, address, and telephone number of manufacturers' representatives;
 4. spare parts list;
 5. detailed operation and maintenance instructions for all equipment.
- l. Contractor shall furnish the Owner with a signed and dated check list prior to the final review of the work. The check list shall include the following items, each of which shall be fully detailed with names and dates:
1. permits;
 2. material list approvals;
 3. pressure and leakage tests;
 4. record drawings (as-built);
 5. operation and maintenance manuals;
 6. manufacturers' warranties;
 7. Contractor's guarantees.

1.12 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
1. Rotary Sprinklers: Equal to 2% percent of amount installed for each type and size indicated, but no fewer than 5 units.
 2. Spray Sprinklers: Equal to 2% percent of amount installed for each type and size indicated, but no fewer than 5 units.
 3. Bubblers: Equal to 2% percent of amount installed for each type indicated, but no fewer than 5 units.
 4. Emitters: Equal to 5% percent of amount installed for each type indicated, but no fewer than 25 units.
 5. Drip-Tube Blank Tubing: Equal to 2% percent of total length installed for each type and size indicated, but not less than 100 feet.
 6. Drip Tube In-Line Tubing: Equal to 2% percent of total length installed for each type and size indicated, but not less than 100 feet.

1.13 RECORD DRAWINGS

- A. Immediately upon installation of any piping, valves, wiring, splices, sprinklers, etc., in locations other than shown on the original drawings or of sizes other than indicated, Contractor shall clearly indicate such changes on the record set of prints. Location of changes shall be indicated by dimensions from two permanent points of reference. Entries shall be made on a daily basis. All record prints shall

be neat and subject to the approval of Owner.

- B. Contractor shall indicate on the record prints the location of all wire splices, original or due to repair, that are installed underground in a location other than next to a satellite controller pedestal, remote control valve box, power source, or connection to a valve in head sprinkler.
- C. The record prints shall also serve as work progress sheets. Contractor shall make neat and legible notations thereon daily as the work proceeds, showing the work as actually installed. Record prints shall be available at all times for review and shall be kept in a location designated by Owner.
- D. If in the opinion of Owner the as-built information is not being properly recorded, construction may be stopped until the proper information has been recorded. Any such stoppage of the work by Owner shall not extend the time for completion of the contract.
- E. Before final inspection and approval, Contractor shall deliver a final drafted copy of the drawing file or a reproducible print of that file, plus one set of prints generated from that file, incorporating all changes noted on the work copies and all notes made during construction.

1.14 CERTIFICATES OF PAYMENT - NOTICE OF COMPLETION

- A. The completion of the contract will be accepted and the Notice of Completion recorded only when the entire Project is complete to the satisfaction of Owner. Completion of contract implies that all intended areas of the project are irrigated as shown on the drawings, the irrigation system and pumping plant operate automatically as intended, operations and maintenance manuals have been delivered to the Owner, and operator training has been completed.
- B. No certificate issued or payment made to Contractor shall be construed or interpreted as an acceptance of any work or materials not in accordance with this contract.
- C. Partial or complete occupancy of the work by Owner shall not be construed or interpreted as an acceptance of any work or materials not in accordance with this contract.

1.15 QUALITY ASSURANCE

- A. Installer Qualifications: Contractor must be a firm engaged full time in the installation of this type of system with at least five (5) years experience and who has

completed a minimum of three (3) irrigation systems similar in material (size and type), design, and extent as indicated for this project and that have resulted in a record of successful in-service performance. Contractor must possess all local/state licenses and be bonded and insured.

- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.16 CLEAN-UP OF WORK SITE

- A. Contractor shall, during the course of construction remove all waste materials from the site recurrently as is necessary to maintain the site in a clean and orderly condition.
- B. Upon completion of the work under this contract, Contractor shall remove from the work site all temporary structures, debris, and waste due to his operation and clean all surfaces, equipment, etc., relative to the performance of this contract.
- C. If Contractor fails to perform a clean-up function within forty-eight hours after notification by Owner to do so, Owner may proceed with the clean-up function as he deems necessary and in the manner deemed most expedient, and all costs thereof shall be at the sole expense of Contractor, and shall be deducted from moneys due under this contract.

1.17 INSPECTIONS

- A. The following inspections may be made by Owner during construction.
 - 1. Pressure and leakage test of the piping system. Test to be conducted by Contractor.
 - 2. Trench depth, change of depth, thrust blocking of pipe lines (if applicable).
 - 3. Finished grade of sprinklers and valve boxes.
 - 4. Restoration of grades upon completion of installation.
 - 5. Test of manual and automatic operation of all equipment.
- B. All tests and inspections must be passed satisfactorily before final acceptance of the system by Owner.
- C. Some tests and inspections may be waived at the discretion of Owner. Waiver of tests and inspections shall be permitted upon written notification by Owner.
- D. Contractor shall remain responsible for all work and proper function of all system components whether tested, inspected, or not.

1.18 POWER SOURCES

- A. Contractor shall be responsible for electrical permitting for his work where required by local ordinances.
- B. Contractor shall coordinate with General Contractor, other trades, and Owner for location of required power source for the irrigation system.

PART 2-MATERIAL

2.1 PIPE AND FITTINGS

- A. Material Source and Quality: Use only new materials throughout. Use only those cleaners, solvents, primers, lubricants, and sealants specified herein and/or accepted and specified by the pipe and fitting manufacturers.
- B. Solvent Weld Joint Pipe: All plastic pipe shall be PVC 1120, Class 200, SDR 21, or Class 160 SDR 26 solvent weld joint, and be in accordance with the latest revision of ASTM Standard 2241. The pipe shall be supplied in twenty foot lengths. One end shall have an integral molded socket conforming to the outside diameter of the pipe.
- C. Above Ground Pipe: All pipe installed in an exposed location, regardless of size, shall be Type K copper water tube.
- D. Solvent Weld Fittings: Meeting or exceeding the requirements set forth in ASTM D-2466, Polyvinyl chloride Schedule 40 Socket Type Pipe Fittings.
- E. Threaded Fittings: PVC pipe shall be adapted to male thread by the use of a Schedule 40 solvent weld coupling and a Schedule 80 threaded-one-end nipple. Schedule 40 PVC threaded male adapters are not acceptable. Schedule 40 PVC female threaded fittings are not acceptable.

2.1 SPRINKLERS

- A. General Requirements: Designed for uniform coverage over entire spray area indicated at available water pressure.
- B. Plastic, Pop-up, Gear-Drive Rotary Sprinklers:
 - 1. Manufacturer:
 - a. Rain Bird
 - b. Hunter
 - c. Approved Equal

2. Description:
 - a. Body Material: ABS.
 - b. Nozzle: ABS.
 - c. Retraction Spring: Stainless steel.
 - d. Internal Parts: Corrosion resistant.

3. Capacities and Characteristics:
 - a. Pop-up Spray Sprinklers: Gear drive, full-circle and adjustable part-circle types with screw-type flow adjustment, stainless steel retraction spring, plastic riser, minimum of 8 nozzles available, integral rubber cover, adjustable from the top of the sprinkler and pop-up heights of 4", 6", and 12".

C. Plastic, Pop-up Spray Sprinklers:

1. Manufacturer:
 - a. Rain Bird
 - b. Hunter
 - c. Approved Equal

2. Description:
 - a. Body Material: ABS.
 - b. Nozzle: ABS.
 - c. Retraction Spring: Stainless steel.
 - d. Internal Parts: Corrosion resistant.
 - e. Pattern: Fixed or Adjustable (VAN), with flow adjustment.

3. Capacities and Characteristics:
 - a. Pop-up Spray Sprinklers: Fixed or adjustable pattern with screw-type flow adjustment, stainless-steel retraction spring, co-molded riser seal that seals cap to body and pop-up heights of 4", 6", and 12".

2.2 VALVES

- A. Bronze Body, Threaded, Manual Valves: Isolation valves shall be Hammond model and size as noted on the drawing or approved equal.

- B. Valve Boxes: Valve boxes are to be high impact plastic as manufactured by Carson Brooks, or approved equal. 'Economy' grade boxes are not acceptable.

- C. Quick Coupling Valves
 1. Hunter Industries
 2. Rain Bird
 3. Approved Equal

- D. Remote Control Valve

1. Hunter Industries
2. Rain Bird
3. Approved Equal

E. Backflow Prevention Device.

1. The backflow prevention device shall be a reduced pressure zone unit, meeting or exceeding the requirements for flow rates and head loss of FCCCHR at U.S.C., ASSE Standard 1013, ANSI/AWWA C511-89, IAPMO (UPC), and CSA B64.4.
2. Body shall be bronze meeting ASTM Standard B584-89. Internal parts shall be made from corrosion resistant materials.
3. The unit shall be equipped at the inlet and outlet with ball valves and unions.
4. The backflow prevention device shall be Wilkins or Febco model and size as indicated on drawing.

2.2 DRIP IRRIGATION SPECIALTIES

A. Manufacturer:

1. Agrifim
2. Approved Equal

B. Drip Tubes with In-Line Attached Emitters:

1. Tubing: Flexible PE or PVC with plugged end.
2. Emitters: Devices to deliver water at approximately 25 psig.
 - a. Body Material: PE or vinyl, with pressure compensating flow control.
 - b. Mounting: Inserted into tubing at set intervals.
3. Capacities and Characteristics:
 - a. Tubing Size: .550" I.D. x .640 O.D. NPS 1/2.
 - b. Emitter Spacing: 18 inches.
 - c. Emitter Flow: 1 gph (3.8 L/h)].

C. Application Pressure Regulators: Brass or plastic housing, NPS 1", with corrosion-resistant internal parts; capable of controlling outlet pressure to approximately 30 psig.

D. Filter Units: Brass or plastic housing, with corrosion-resistant internal parts; of size and capacity required for devices downstream from unit.

E. Air Relief Valves: Brass or plastic housing, with corrosion-resistant internal parts.

F. Vacuum Relief Valves: Brass or plastic housing, with corrosion-resistant internal parts.

2.3 CONTROLLERS

A. Manufacturer:

1. Rain Bird
2. Hunter
3. Approved Equal

B. Description:

1. Controller Stations for Automatic Control Valves: Each station is variable from approximately 1 to 720 minutes. Include switch for manual or automatic operation of each station.
2. Exterior Control Enclosures: NEMA 250, Type 4, weatherproof, with locking cover and two matching keys; include provision for grounding.
 - a. Body Material: Molded plastic.
 - b. Mounting: Surface type for wall.
3. Control Transformer: 24-V secondary, with primary fuse.
4. Timing Device: Adjustable, 24-hour, 14-day clock, with automatic operations to skip operation any day in timer period, to operate every other day, or to operate two or more times daily.
 - a. Manual or Semiautomatic Operation: Allows this mode without disturbing preset automatic operation.
 - b. Nickel-Cadmium Battery and Trickle Charger: Automatically powers timing device during power outages.
 - c. Surge Protection: Metal-oxide-varistor type on each station and primary power.
 - d. Non-volatile Memory
 - e. Four Independent Programs
 - f. Program Seasonal Adjust
5. Moisture Sensor: Adjustable from one to four days, to shut off water flow during rain.
6. Wiring: UL 493, Type UF multiconductor, with solid-copper conductors; insulated cable; suitable for direct burial.
 - a. Feeder-Circuit Cables: No. 12 AWG minimum, between building and controllers.
 - b. Low-Voltage, Branch-Circuit Cables: No. 14 AWG minimum, PE insulated, between controllers and automatic control valves; color-coded different from feeder-circuit-cable jacket color; with jackets of different colors for common wire and station wire.
 - c. Splicing Materials: Manufacturer's packaged kit consisting of insulating, spring- type connector or crimped joint and epoxy resin moisture seal; suitable for direct burial. Use 3M DBRY waterproof connectors or approved equal.

- F. Rain Sensor
 - 1. Miniclik
 - 2. Approved Equal

2.3 WIRING

- A. 24 Volt Valve Wire: The 24 volt valve control wire shall be copper type UF irrigation control wire. All valve control wires shall be 14 AWG and shall be red in color. All 24 volt common wires shall be 14 AWG and shall be white in color.
- B. Wire Splices
 - 1. Valve control wire, 14 AWG, shall be spliced using 3M Corporation model DBY or DBR direct burial splice kits.
 - 2. Power wire, 120/240 vac, shall be spliced using 3M Corporation model DBY-6 or DBR-6 direct burial splice kits.

2.4 AUTOMATIC DRAIN VALVES

- A. Description: Spring-loaded-ball type of corrosion-resistant construction and designed to open for drainage if line pressure drops below 2-1/2 to 3 psig (17 to 20 kPa).

PART 3 - EXECUTION

3.1 PIPE AND FITTINGS

- A. Pipe Sizes
 - 1. Contractor will follow pipe sizing as shown on the drawings. Changes in size and points of interconnections must be approved by Owner. Improper changes in size and points of interconnections may result in poor sprinkler performance or excessive water hammer.
- B. Above Ground Pipe: All copper pipe shall be fitted with solder joints and/or solder x threaded adapters.
- C. Threaded Fittings
 - 1. All threaded fittings shall be made using Teflon tape.
 - 2. Plastic threaded fittings shall be made using hand pressure only. Threaded plastic assemblies made using wrenches will be rejected.
 - 3. Metal pipe threaded fittings shall be made using Teflon tape or paste and wrench pressure.
- D. Solvent Welding

1. All solvent welding of pipe and fittings shall be in accordance with their manufacturer's recommendations. Color tinted primer and clear solvent must be used at all joints.
2. All solvent welded joints must remain undisturbed for at least 15 minutes, and not subjected to internal nor external pressure for at least one hour.
3. Contractor shall familiarize himself and his workers with proper solvent welding technique as outlined below.
 - a. Cut pipe as square as possible using proper pipe cutting tools.
 - b. Debur the cut end, both inside and outside surfaces using a deburring tool or knife.
 - c. Clean the surfaces to be joined using a dry towel and/or sandpaper.
 - d. Using a natural bristle brush apply primer to both of the mating surfaces, ensuring that all surface is covered liberally.
 - e. Before the primer dries apply solvent liberally to the pipe, once around and to a depth exceeding the socket depth.
 - f. Apply a light coat of solvent around the entire depth of the socket.
 - g. Apply a second liberal coat of solvent on the pipe.
 - h. Insert the pipe into the socket to its full depth and rotate one quarter turn.
 - i. Hold joint together for at least 15 seconds.
 - j. Wipe excess solvent from the joint before it hardens.
 - k. Do not allow a bead of solvent to harden at the exterior corner between the pipe and the fitting.
 - l. Notes regarding solvent welding:
 - m. Do not solvent weld when the surfaces are wet with water.
 - n. The solvent, primer, pipe, and fittings should be at the same temperature.
 - o. Use solvent and primer appropriate to the pipe size and the temperature.
 - p. Discard outdated or obviously contaminated solvent and primer.

E. Trench Installation

1. All mainline pipe shall have a minimum of 18" of cover. All lateral line pipe shall have a minimum of 12" of cover.
2. Depth changes shall be accomplished by sloping the pipe or by using 45 degree fittings.
3. The minimum trench width for pipe sized shall be six inches (2").
4. Blocking should not be used to change pipe grade or to intermittently support pipe across excavated sections. Do not lay pipe so that local 'low spots' occur that will not allow the water to drain and introduce possible freeze damage in the winter.
5. Pipe shall be laid in open trenches so that it snakes back and forth through the trench to allow for expansion and contraction.
6. At the end of each work day, the Contractor shall cover the open end of the pipe so as to prevent silt, debris, or small animals from entering the pipe.

Open ends shall be covered with a ten (10) mil plastic held securely in place with tape.

- F. Contractor is responsible for disposal of uncovered rock and debris resulting from his work.
- G. Bedding: The bottom of the trench is to be graded to a line so that the pipe, as nearly as possible, will have bearing for its full length. The trench bottom is to be hand excavated below grade to allow for bells, couplings, and fittings where they occur. All rock and organic material shall be removed from the trench bottom prior to placing of pipe. If rock is encountered in the excavation, the trench must be excavated to a depth of six inches (6") below pipe grade and filled with well-compacted earth to pipe grade. There will be at least six inches (6") of earth between the bottom or sides of the pipe and any rock. If unstable bedding material is encountered, it shall be removed and replaced with suitable material.
- H. Backfill
 1. The initial backfill in contact with the pipe and immediately surrounding it shall be of fine-grained material free from rocks, stones, or clods greater than approximately 3/4" diameter and earth clods greater than approximately 2" diameter. The back-fill shall be tamped in layers not to exceed 6" lift and compacted firmly around the pipe and up to at least 6" above the top of the pipe. Backfill shall be compacted to 95% standard proctor density. The back-fill material shall be sufficiently damp to permit thorough compaction under and on each side of the pipe to provide support, free from voids. Care should be taken to avoid deforming, displacing, or damaging the pipe during this phase of the operation.
 2. The final back-fill shall be placed and spread in approximately uniform layers in such a manner as to fill the trench completely so that there will be no unfilled spaces under or around rocks or lumps of earth in the back-fill. Final back-fill shall be free of large rocks, frozen clods and other debris greater than 3" in diameter. Final back-fill shall be mechanically tamped to 95% standard proctor density and finished with grade. Mounding of final back-fill in anticipation of natural settling is not acceptable.
 3. Backfill excavations promptly following installation of irrigation sleeves. Compact material under sleeve haunches and bring backfill evenly up on both sides. Place and compact initial backfill of satisfactory soil material, free of particles larger than 1 inch, in layers no more than 4 inches in loose depth. Compact each layer with a hand-operated tamper. Place and compact final backfill of satisfactory soil material to final subgrade.

4. Compact each layer to at least 95 percent of maximum dry density in accordance with ASTM D698. Each layer shall be thoroughly tamped before placement of the successive layer. The top 12 inches of backfill shall be compacted to at least 98 percent of maximum dry density. Owner's geotechnical testing service shall be notified of the schedule for installation of irrigation sleeves in order to provide random testing of the backfilling and compaction.
 5. If settling occurs, the Contractor shall remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.
- I. Flushing and Testing
1. Every effort must be made to prevent soil, sand, and other construction debris from entering the pipe. Mainline pipes must be thoroughly flushed with water prior to opening lateral isolation valves. Lateral pipes must be flushed with water vented through drains or sprinklers with the internal components removed. Contractor is responsible for the effects of construction debris in the pipelines on the irrigation equipment.
 2. Contractor is responsible for pressure and leak testing the pipe network. Owner must be notified 24 hours in advance of a test. Tests may be applied to individual sections of the pipe network.
 3. Test is to be conducted with pipe filled with water and all air expelled.
 4. Test pressure is to be available line pressure.
 5. Pressure test duration is to be 1 hour. Pressure must not drop more than 5 psi over the duration of the test.
 6. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
 7. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 8. Any irrigation product will be considered defective if it does not pass tests and inspections.
 9. Prepare test and inspection reports.

3.2 SPRINKLER INSTALLATION

- A. Install sprinklers after hydrostatic test is completed.
- B. Install sprinklers at manufacturer's recommended heights. In sod areas, adjust sprinklers so they will be flush with, or not more than 1/2 inch (13 mm) above, finished soil grade. In shrub beds and mulch areas, adjust sprinklers to ensure top of sprinkler is at finished mulch grade.
- C. Locate part-circle sprinklers to maintain a minimum distance of 6 inches (150

mm) from walls and 3 inches (75 mm) from other boundaries unless otherwise indicated.

3.3 DRIP IRRIGATION SPECIALTY INSTALLATION

- A. Install freestanding emitters on pipe riser to mounting height indicated.
- B. Install manifold emitter systems with tubing to emitters. Plug unused manifold outlets. Install emitters on off-ground supports at height indicated.
- C. Install multiple-outlet emitter systems with tubing to outlets. Plug unused emitter outlets. Install outlets on off-ground supports at height indicated.
- D. Install drip tubes with direct-attached emitters on ground.
- E. Install drip tubes with remote-discharge on ground with outlets on off-ground supports at height indicated.
- F. Install off-ground supports of length required for indicated mounted height of device.
- G. Install pressure regulators and filter units in piping near device being protected, and in control- valve boxes.
- H. Install air relief valves in piping, and aboveground.
- I. Dripline to be staked a minimum of every five (5) feet and on each side of fittings.
- J. Test dripline operation to ensure all emitters are functional prior to covering with mulch.

3.4 VALVE INSTALLATION

- A. Underground Curb Valves: Install in curb-valve casings with tops flush with grade.
- B. Underground Iron Gate Valves, Resilient Seat: Comply with AWWA C600 and AWWA M44. Install in valve casing with top flush with grade.
- C. Install valves and PVC pipe with restrained, gasketed joints.
- D. Aboveground Valves: Install as components of connected piping system.
- E. Pressure-Reducing Valves: Install in boxes for automatic control valves between shutoff valves.
- F. Throttling Valves: Install in underground piping in boxes for automatic control

valves.

- G. Drain Valves: Install in underground piping in boxes for automatic control valves.

3.5 VALVE BOXES

- A. Valve boxes shall be installed with the top flush with finished grade. Rectangular boxes shall be supported on block, brick, or pressure treated lumber. Excavation for the box shall be deep enough to accommodate 3" of gravel below the valve assembly, the valve assembly, support blocks, and valve box. There must be a minimum of 1" clearance between the bottom of the valve assembly and the top of the gravel bed.
- B. Round valve boxes are to be supported by plastic sleeve. Sleeve is to be notched to fit around the pipe and shall rest on a brick pad below the pipe. Sleeve must not rest on the pipe.

3.6 CONTROL SYSTEM

- A. Equipment Mounting: Install interior controllers on wall.
 - 1. Coordinate location of irrigation controller with Owner.
 - 2. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 3. Install anchor bolts to elevations required for proper attachment to supported equipment.
- B. Install control wire in same trench as irrigation piping and at least 2 inches (51 mm) or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install wire in separate sleeve under paved areas.
- C. Install rain switch in location to be determined. Location is to be exposed to rain, but protected from vandalism. Connect to controller with two 14 gauge wires installed in PVC conduit.

3.7 WIRING

- 1. One individual valve control wire shall be run from the controller to each valve, no matter how many valves are controlled per station. As many white common wires as necessary shall connect all of the valves controlled by a single satellite.
- 2. Provide an expansion coil within three feet of each wire splice or connection and at each change of direction. Each expansion coil shall be formed by wrapping at least six turns of wire around a two inch diameter pipe, then removing the pipe.

3. Install valve wire in trenches wherever possible.

3.8 GROUNDING

- A. It is the responsibility of Contractor to provide surge protection for all electrical equipment installed by him in relation to the irrigation contract.

3.9 FIELD QUALITY CONTROL

- A. Tests and Inspections:
 1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
 2. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
 3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- B. Any irrigation product will be considered defective if it does not pass tests and inspections.
- C. Prepare test and inspection reports.

3.10 STARTUP SERVICE

1. Verify that controllers are installed and connected according to the Contract Documents.
2. Verify that electrical wiring installation complies with manufacturer's submittal and installation requirements.

3.11 ADJUSTING

- A. Adjust settings of controllers.
- B. Adjust automatic control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.
- C. Adjust sprinklers, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/2 inch (13 mm) above, finished soil grade. In shrub beds and mulch areas, adjust sprinklers to ensure top of sprinkler is at finished mulch level.

3.12 DEMONSTRATION

- A. It is contractor's responsibility to train Owner's maintenance personnel to adjust, operate, and maintain automatic control valves and controllers.

END OF SECTION 328400

SECTION 329200 – TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:

- 1. Seeding.
- 2. Hydroseeding.
- 3. Sodding.

- B. Related Requirements:

- 1. Section 329300 "Plants" for trees, shrubs, ground covers, and other plants.

1.3 DEFINITIONS

- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- E. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- F. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass and other unspecified growth.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For landscape Installer.
- B. Product Data: For each type of product indicated.
 - 1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.
- C. Planting Soil Tests: Provide soil testing by independent testing agency that indicates proper nutrients and suitability of soil for growth of field turf. Amend soil as required by testing agency and provide verification of amended soils.
- D. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.
- E. Certification of Grass Sod: From sod vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.
- F. Product Certificates: For soil amendments and fertilizers, from manufacturer.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment with a minimum of 5 years experience.
 - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
 - 2. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on project site when work is in progress.
 - 3. Pesticide Applicator: State licensed, commercial.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
- C. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk materials with appropriate certificates.

1.8 WARRANTY

- A. It is the responsibility of the Contractor to make known any site conditions which may be harmful or growth inhibiting to the plan materials specified, prior to the installation of said materials.
- B. Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner, or incidents that are beyond Contractor's control. Warranty shall cover any plant loss due to weather damage to plants installed out of normal planting season.
 - 2. Warranty Periods from Date of Substantial Completion:
 - a. Seed, Hydroseed, and Sod: 12 months.

1.9 FIELD CONDITIONS

- A. Planting Restrictions: Plant during normal periods for each type of plant. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be

obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed.
- B. Seed Species:
 - 1. Bermudagrass (permanent vegetation)
 - 2. Browntop Millet (temporary cover crop – see plans for planting dates and seeding rate requirements)
 - 3. Winter Rye (temporary cover crop – see plans for planting dates and seeding rate requirements)

2.2 TURFGRASS SOD

- A. Turfgrass Sod: Approved nursery grown grade, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted with fibrous root system, free of stones, burned or bare spots, disease, nematodes, soil borne insects and containing no more than 5 weeds per 1000 square feet.
- B. Turfgrass Species: Bermudagrass (*Cynodon dactylon*) – See drawings for alternates

2.3 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2.4 MULCHES

- A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.
- B. Sphagnum Peat Mulch: Partially decomposed sphagnum peat moss, finely divided or of granular texture, and with a pH range of 3.4 to 4.8.
- C. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
- D. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- E. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

2.5 PESTICIDES

- A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.5 EROSION-CONTROL MATERIALS

- D. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.
- E. Erosion-Control Fiber Mesh: Biodegradable burlap or spun-coir mesh, a minimum of 0.92 lb/sq. yd., with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches long.
- F. Erosion-Control Mats: Cellular, non-biodegradable slope-stabilization mats designed to isolate and contain small areas of soil over steeply sloped surface, of 3-inch nominal mat thickness. Include manufacturer's recommended anchorage system for slope conditions.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 - 3. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 4. Uniformly moisten excessively dry soil that is not workable or which is dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
 - 2. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. General: Prepare planting area for soil placement and mix planting soil according to construction drawing designations.
- B. Limit turf subgrade preparation to areas to be planted.
- C. Retain first paragraph below if turf subgrades are stripped of surface soil or regraded by excavating, filling, or backfilling.

- D. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches (100 mm). Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
1. Apply superphosphate fertilizer directly to subgrade before loosening.
 2. Thoroughly blend planting soil off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.
 3. Spread planting soil to a depth indicated on drawings but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
 - a. Spread approximately 1/2 the thickness of planting soil over loosened subgrade. Mix thoroughly into top 2 inches (50 mm) of subgrade. Spread remainder of planting soil.
 - b. Reduce elevation of planting soil to allow for soil thickness of sod.
- E. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 2. Loosen surface soil to a depth of at least 6 inches (150 mm). Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches (100 mm) of soil. Till soil to a homogeneous mixture of fine texture.
 - a. Apply superphosphate fertilizer directly to surface soil before loosening.
 3. Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, trash, and other extraneous matter.
 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- F. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/4 inch (13 mm) of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- G. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- H. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph.
 - 1. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 2. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 3. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate of 2 lb/1000 sq. ft.
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes exceeding 1:6 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.
- E. Protect seeded areas with erosion-control mats where indicated on Drawings; install and anchor according to manufacturer's written instructions.
- F. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.
 - 1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
- G. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
 - 1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
 - 2. Spray-apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.
 - 3. Spray-apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch (hydromulching) at a rate of 1000 lb/acre.

3.6 SODDING

- A. Moisten prepared surface immediately prior to laying sod.
- B. Moisten prepared surface immediately prior to laying sod. Moisten prepared surface immediately prior to laying sod. Time limit and option in first paragraph below are requirements of TPI's "Guideline Specifications to Turfgrass Sodding."
- C. Lay sod within 24 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- D. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 - 1. Lay sod across slopes exceeding 1:3.
 - 2. Anchor sod on slopes exceeding 1:6 with wood pegs or steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- E. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

3.7 TURF MAINTENANCE

- A. General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 - 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
 - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.

2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 1. Mow bermudagrass to a height of 1/2 to 1 inches.
- D. Turf Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
 1. Use fertilizer that provides actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

3.8 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
 1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 95 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

3.9 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.10 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove non-degradable erosion-control measures after grass establishment period.

3.11 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
 - 1. Turf: 12 months from Final Acceptance.
 - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.

END OF SECTION 329200

SECTION 331000 - WATER UTILITY

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work included: Provide water distribution system as shown on the Drawings, specified herein, and needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 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. All materials and installation methods are to conform with the standards of the St. Johns Water Company.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Division 01.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Division 01.
- B. Shipment of pipe:
 - 1. Protect pipe with tarp or other means during shipment to prevent truck exhaust from damaging pipe.
- C. Avoid severe impact blows, gouging or cutting by metal surfaces or rocks.

PART 2 PRODUCTS

2.1 GENERAL

- A. Use any pipe material and associated fittings as specified herein, except where use of a particular material is indicated on the plans, or specified herein.

2.2 PIPE AND FITTINGS

- A. General:

1. All work and materials between the main and the meter shall comply with City of Georgetown Water Utility Department, Minimum Standards for the Design and Construction of Water and Wastewater Systems.
2. No asbestos cement pipe allowed.
3. Any pipe, solder, or flux used shall be lead free (lead free is defined as less than 0.2% lead in solder or flux and less than 8.0% lead in pipes and fittings).
4. Gaskets are to be factory-installed and integral with the pipe.
5. All materials and products that contact potable water shall be third party certified as meeting the specifications of ANSI/NSF Standard 61.
6. All chemical or products added to the public water supply must be third party certified as meeting the specifications of ANSI/NSF Standard 60.
7. For valves cast all markings integral on the valve body with the size of valve, year of manufacture and the class working pressure.
 - a. Certifications to rate a 150B valve body to a Class 250 valve will not be acceptable.
8. For valves spray coat all interior wetted ferrous surfaces with two-component epoxy applied to a nominal thickness of 3 to 4 mils.
 - a. Coating material to be AWWA and U.S. Food and Drug Administration approved for use with potable water.

B. Pipe:

1. Plastic Service Pipe, 1-1/2" in diameter and smaller"
 - a. Provide PVC pipe complying with ASTM D2241 for PVC 1120, SDR 26, with NSF approval marked at 18" intervals.
 1. Use integral bell or coupling type joints with elastomeric gaskets.
 - a. Integral bells to comply with ASTM D2672.
 - b. Couplings to comply with ANSI/AWWA C900.
 - c. Gaskets to comply with ASTM F477.
 - d. Lubricants shall be compatible with pipe and gasket materials, shall not support bacteria growth and shall not adversely affect potable quality of line contents.
 2. Use PVC fittings, 160 psi at 73° pressure rating, joint design to conform to pipe joints.

- b. Provide pipe complying with ASTM D1785 for PVC 1120. Schedule 80, dark gray color NSF approved solvent weld coupling joints, unless otherwise indicated.
- c. Provide standard weight, hot-dip galvanized steel pipe complying with ASTM A53, ends threaded and coupling on one end.

C. Joints:

1. Plastic pipe:

- a. Use integral bell or coupling type with elastomeric gaskets.
- b. Integral bells to comply with ASTM D2672.
- c. Couplings to comply with ANSI/AWWA C900.
- d. Gaskets to comply with ASTM F477.
 - 1. Natural rubber gaskets are not acceptable.
- e. Lubricants shall be compatible with pipe and gasket materials, shall not support bacteria growth and shall not adversely affect potable quality of line contents. Vegetable shortening shall not be used to lubricate joints.
 - 1. NSF approved.

2. Polyethylene pipe joining:

- a. Sections of polyethylene pipe should be joined into continuous lengths on the job site above ground. The joining method shall be the butt fusion method and shall be performed by the manufacturer's recommendations. The butt fusion equipment used in the joining procedures should be capable of meeting all conditions recommended by the pipe manufacturer, including, but not limited to, temperature requirements, alignment, and fusion pressures. Prior approval of equipment and personnel shall be obtained before fusion begins. The completed pipe joints shall be guaranteed for five years in writing to the Owner and its Contractor.
- b. End connections: Special restrained joint mechanical joint adapters may be required for each end of the P.E. pipeline. The price quoted shall include any special end configuration and polyethylene ring to hold a standard mechanical joint.

D. Fittings and specials:

- 1. Plastic pipe 3" and smaller: Use PVC fittings, 160 psi at 73°F pressure rating, joint design to conform to pipe joints.

E. Couplings:

1. Provide couplings where needed to make piping connections and where located on the plans.
 2. Provide mechanical joint ductile iron sleeve, full length, minimum 12".
 3. Provide cutting-in sleeve where installing fittings in an existing line.
 - a. Provide ductile iron with mechanical joint.
 4. Provide restrained joint couplings where restrained joints are indicated on the plans.
- F. Restrained joint pipe and fittings:
1. Provide restraint for PVC pipe 3" and smaller by split serrated ring.
 1. Restraint device to be a two-piece configuration with plurality of individually actuating gripping services.
 2. Restraint device body to be manufactured from ductile iron conforming with ASTM A536.
 3. Pressure rating to match PVC pipe on which it is used with capability to withstand test pressure of 2 times rated pressure.
 4. Fusion applied epoxy coating finish per AWWA C-213.
 5. Provide series 6500 as manufactured by EBAA Iron, Inc. of Eastland, Texas, or approved equal.

2.3 LINE DETECTION TAPE

- A. Provide the following:
1. Provide 2" wide metallic detection tape on all buried PVC piping.
 - a. Provide 5.0 mil overall thickness with no less than a 50 gauge solid aluminum foil core.
 - b. Foil to be visible from both sides.
 - c. No inks or printing extended to the edges of the tape.
 - d. Encase printing to avoid ink rub-off.
 - e. Tensile strength - 28 lbs/inch.
 - f. Use heat set mylar inks.
 - g. Locate 12" below ground surface in pipe trench.
 - h. Color to be Safety Precaution Blue.

- i. Wording on tape to indicate "Potable Water" at no greater than 24" on center.

2.4 SERVICE SADDLE

- A. Comply with City of Georgetown Water Utility Department, Minimum Standards for the Design and Construction of Water and Wastewater Systems.

2.5 MISCELLANEOUS PARTS AND ACCESSORIES

- A. Use standard commercial grade suitable for the type of installation or system involved, and conforming to the applicable standards and specifications of the AWWA.

PART 3 EXECUTION

3.1 HANDLING

- A. Handle pipe accessories so as to ensure delivery to the trench in sound, undamaged condition:
 - 1. Carry pipe into position - do not drag.
 - 2. Use pinch bars or tongs for aligning or turning the pipe only on the bare end of the pipe.
 - 3. Use care not to injure pipe linings.
 - 4. Do not damage pipe with chokers or lifting equipment.
- B. Thoroughly clean interior of pipe and accessories before lowering pipe into trench. Keep clean during laying operations by plugging or other method approved by the Engineer.
- C. Before installation, inspect each piece of pipe and each fitting for defects.
 - 1. Material found to be defective before or after laying: Replace with sound material meeting the specified requirements, and without additional cost to the Owner.
- D. Gaskets: Store in a cool dark place until just prior to time of installation.

3.2 PIPE CUTTING

- A. Cut pipe neatly and without damage to the pipe.
- B. Unless otherwise recommended by the pipe manufacturer, and authorized by the Engineer, cut pipe with mechanical cutter only.
 - 1. Use wheel cutters when practicable.
 - 2. Cut plastic pipe square, remove all burrs, and grind bevel on end.

3.3 LOCATING

- A. Water mains shall be laid at least 10' edge-to-edge horizontally distanced from any existing or proposed sewer pipes.
- B. Should a 10' separation not be practical, then the water main may be located closer with South Carolina Department of Health and Environmental Control (SCDHEC) approval provided:
 - 1. It is laid in a separate trench.
 - 2. It is laid in the same trench with the water main located at one side on a bench of undisturbed earth.
 - 3. In either of the above cases, crown elevation of the sewer shall be at least 18" below invert elevation of water line.
- C. Where water lines cross over sewers, maintain 18" vertical separation between the outside of the sewer and the outside of the water line.
- D. Where water lines cross under sewers, each line shall be cast iron or ductile iron.
 - 1. A full length of water line shall be located over an existing sewer so that joints of each line will be as far from each other as possible.
 - 2. Where a new water main crosses a new sewer line, a full length of pipe shall be used for both the water main and sewer line and the crossing shall be arranged so that the joints of each line will be as far as possible from the point of crossing and each other.
- E. No water pipe shall pass through or come in contact with any part of a sewer manhole.
- F. Water lines shall not be laid within 25' horizontally from any portion of a wastewater tile or spray field.
- G. Water lines shall be located outside all contaminated areas, unless using pipe materials that will protect the water supply.
- H. No flushing device or drain directly connected to any type of sewer is allowed.
- I. No cross connections between water lines and any pipes, valves, tanks or pumps that are not part of the potable water system are allowed.
- J. Water lines may come in contact with storm sewers or catch basins if there are no other practical alternatives provided that ductile iron is used and no joints of the water line are within the storm sewer or catch basin, and, provided that the joints are located as far as possible from the storm sewer or catch basin.

3.4 ALIGNMENT OF PIPE

- A. Pipe lines intended to be straight shall be so laid.
- B. Where vertical or horizontal alignment requires deflection from straight line or grade, such deflection shall not exceed maximum deflection recommended by the pipe manufacturer.
- C. If alignment requires deflection exceeding recommended limits, furnish special bends or a sufficient number of shorter lengths of pipe to provide angular deflections within the allowable limits.

3.5 PLACING AND LAYING

A. General:

1. Lower pipe and accessories into trench by means of derrick, ropes, belt slings, or other equipment approved by the Engineer.
2. Do not dump or drop any of the materials of this Section into the trench.
3. Except where necessary in making connections to other lines, lay pipe with the bells facing in the direction of laying.
4. Rest the full length of each section of pipe solidly on the pipe bed, with recesses excavated to accommodate bells, couplings, and joints.
5. Take up and relay pipe that has the grade or joint disturbed after laying.
6. Do not lay pipe in water, or when trench conditions are unsuitable for the work; keep water out of the trench until jointing is completed.
7. Securely close open ends of pipe, fittings, and valves when work is not in progress.
8. Where any part of coating or lining is damaged, repair to the approval of the Engineer and at no additional cost to the Owner.

B. Restrained joints:

1. Install in accordance with manufacturer's instructions.
2. Tighten set screws to the manufacturer's rated torque using a torque wrench. If twist-off nuts are provided, tighten screws until nut breaks loose.

3.6 STERILIZATION

A. Sterilize per the requirements of SCDHEC

END OF SECTION 331000

SECTION 333000 - SANITARY SEWER UTILITY

PART 1 GENERAL

1.1 DESCRIPTION

- A. Work included: Provide gravity sanitary sewer as shown on the drawings, specified herein, and needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 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.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Division 01.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Division 01.
- B. Storage of PVC pipe:
 - 1. Store in unit packages as received from manufacturer until just prior to use.
 - 2. Stack units in such a manner as to prevent deformation to pipe barrel and bells.
 - 3. Protect from direct sunlight by covering with opaque material if storage period will exceed six weeks.
- C. Avoid severe impact blows, gouging or cutting by metal surfaces or rocks.

1.5 PROTECTION OF OTHER UTILITIES

- A. Location:
 - 1. Approximate location of certain known underground lines is shown.
 - 2. Existing small lines not shown.
 - 3. Locate small and other possible utility lines using electronic pipe finder, or other approved method.

4. Excavate and expose existing underground utilities ahead of trenching operations.
- B. Repair or replace any damaged utility line or structure at no additional cost to Owner.

1.6 CONFLICTING UTILITIES

- A. Remove and/or relay conflicting utilities, when so directed by the Engineer, at the expense of the Owner.
- B. Where alterations to existing utilities are shown to avoid conflicts, make alterations at no cost to Owner.

1.7 JOB CONDITIONS

- A. Work under this Section may require construction or work in a confined space, defined as any space having one or more of the following characteristics:
 1. Limited openings for entry and exit.
 2. Unfavorable natural ventilation.
 3. Not designed for continuous worker occupancy.
- B. The Contractor shall have on the job site at all times the following minimum safety equipment:
 1. Gas monitor capable of testing and detecting for combustible gas, oxygen deficiency and hydrogen sulfide.
 2. Confined space access and retrieval winch system.
 3. Ventilating fan with large diameter ventilating hose.
 4. Supplied air respirator, MISHA/NIOSH approved type.
 5. Safety harness and lifelines.

This equipment to be available for use by the Contractor, Engineer and Owner for the duration of the project.

- C. All entries into or work within confined spaces to be conducted in accordance with the U.S. Department of Health and Human Services/National Institute for Occupational Safety and Health [DHHS (NIOSH)] Publication No. 87-113, A Guide to Safety in Confined Spaces.

PART 2 PRODUCTS

2.1 GENERAL

- A. Pipe shall be subject to Engineer's observation, at plant, trench or other point of delivery, for culling and rejecting pipe, independent of laboratory tests, not conforming to specifications.

- B. Rejected pipe will be marked by the Engineer and Contractor shall remove it from project site.

2.2 PIPE AND FITTINGS

- A. Use any pipe material specified herein, except where use of a particular pipe material is indicated on the Contract Drawings.
- B. Polyvinyl chloride pipe and fittings (PVC):
 1. Use integral wall bell and spigot, minimum of SDR35, complying with ASTM 3034.
 2. Use elastomeric gasket joints, providing watertight seal.
 3. Furnish pipe in 12.5 or 20-foot lengths.

2.3 CLEANOUTS

- A. Provide cleanouts on each separate service line.
 1. Provide J. R. Smith, Josam or equal.
 2. Provide Smith #4253S-G (taper thread - bronze plug, cast iron top) or Josam #58860-22-5 when located within asphalt or concrete.
 3. Coat with 2 shop coats of bitumastic paint.
 4. Provide cleanouts of the same diameter as lines in which they are installed up to 4", and not less than 4" for larger pipe diameters.
 5. Comply with the latest adopted version of the International Plumbing Code or local codes where applicable.
 6. Provide concrete protection pad set at grade.

2.4 SERVICE PIPE FITTINGS

- A. Provide PVC fittings in conformance with the requirements of ASTM D-3034 with minimum wall thickness of SDR35.
- B. Provide PVC material with cell classification of 12454-B or C as defined in ASTM D-1784.
- C. Gaskets will have a minimum cross-sectional area of 0.20 square inches and conform to ASTM F-477.
- D. Provide fittings with socket depths not less than the minimum depths shown in Table 2 of ASTM D-3034 latest revision.

2.5 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.

PART 3 EXECUTION

3.1 LAYING OUT WORK

- A. Provide all materials, labor, instruments, etc. required to lay out Work.
- B. Prepare "cut sheets" under direct supervision of the Engineer.
- C. Exercise proper precaution to verify figures on the drawings prior to laying out Work. Contractor will be held responsible for any errors therein that otherwise might have been avoided.
- D. Promptly inform Engineer of errors or discrepancies found, in order that proper corrections may be made.

3.2 LOCATION

- A. Sewer lines in relation to water lines must conform to South Carolina Standards for Wastewater Facility Construction R.61-67 section 67-300 paragraph A.14.
- B. Where the sewer location is not located clearly by dimensions on the drawings, locate the sewer:
 - 1. Not closer than 10' horizontally from a water supply main or service line. The distance shall be measured edge to edge.
 - 2. Where it is not practical to maintain a 10' horizontal separation, the sewer pipe may be installed closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18" above the top of the sewer.
 - 3. Where sewers are crossing a water main, either above or below, provide a minimum vertical distance of 18" between the outside of the water main and the outside of the sewer.
 - 4. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints.
 - 5. Where a water main crosses under a sewer, fully encase the sewer pipe for a distance of 10' on each side of the crossing; or
 - 6. Use acceptable pressure pipe with no joint closer horizontally than 3' feet from the crossing. This pipe will be pressure tested to assure watertightness prior to backfilling.

7. Where concrete encasement is used, provide not less than 4" thickness including that on pipe joints.

3.3 INSTALLATION

- A. Trench, backfill and compact for the work of this Section in strict accordance with pertinent provisions of Section 312333 of these specifications, and the following requirements:

1. Maximum trench widths, depths and bedding methods.
 - a. Install all sewers complying with tables for depths of cut and class of bedding included hereinafter.
 - b. Where trenches are excavated beyond specified widths, or trench walls collapse, lay sewer complying with requirements of the next better class of bedding at no additional cost to the Owner.
 - c. Include cost of special bedding and tamping in unit prices bid for sewer.
2. Polyvinyl chloride pipe (SDR35):

MAXIMUM DEPTHS IN FEET					
		CLASS OF BEDDING			
		D	C	B	A
PIPE SIZE	MAX. TRENCH WIDTH	FLAT BOTTOM TRENCH	TYPE 1 OR TYPE 2	TYPE 2* ONLY	SPECIAL CONCRETE BEDDING
4"	2'0"	**	**	30	30
8"	2'2"	**	**	30	30
10"	2'4"	**	**	30	30
12"	2'6"	**	**	30	30
15"	2'10"	**	**	30	30
18"	3'2"	**	**	30	30
21"	3'6"	**	**	30	30
*		Class B Bedding (Type 2) shall extend to the top of the pipe.			
**		Do not use this Class of bedding for this pipe size and trench width.			

3. Bedding and tamping requirements for the various classes of bedding shall comply with the following specifications:
 - a. Class A Bedding - Excavate trench to one-fourth of nominal pipe diameter below pipe grade; lay pipe to grade on concrete blocking; place 2500 psi concrete around pipe for full width of trench up to one-fourth nominal pipe diameter above the invert.

- b. Class B (Type 1) Bedding - Shape bottom of trench to a level 2" below bottom of pipe; bring bed to proper level by spreading and thoroughly tamping fine granulated moist earth and sand to conform accurately to one-fourth circumference of pipe barrel; provide suitable material if not available from trench excavation; lay pipe, backfill and hand tamp in thin layers to height three-fourths of pipe diameter, using material same as bedding material; complete trench backfill complying with Section 31-20-00.
 - 1. Trenches excavated to excess depths shall be brought to grade with stone or gravel bedding at the Contractor's expense.
 - 2. Exercise care to avoid disturbing pipe grade, alignment or joints at all times.
 - 3. In lieu of this class bedding, Contractor may elect to use Class B (Type 2) bedding.
- c. Class B (Type 2) Bedding - Undercut 4" below pipe barrel, full width of trench; bring to grade with approved backfill and compacted crushed stone complying with SCDOT Aggregate No. 5; except for PVC sewers, use SCDOT Aggregate No. 57, then:
 - 1. For pipe other than PVC, place stone in six-inch layers to mid-point of pipe, compacting by slicing with shovel.
 - 2. For PVC pipe, place stone (Aggregate No. 57) in six-inch layers to the top of the pipe, compacting by slicing with shovel.
 - 3. Complete trench backfill complying with Section 31-20-00.
- d. Class C (Type 1) bedding - Shape trench bottom by hand to conform accurately to bottom one-quarter of pipe barrel circumference.
 - 1. Use Class C (Type 2) bedding if unable to properly shape trench bottom.
 - 2. If shaping is not performed accurately, the Contractor will be required to use Class C (Type 2) bedding.
- e. Class C (Type 2) Bedding - Undercut 4" below bottom of pipe barrel; full width of trench; bring to grade with approved backfill and compacted crushed stone complying with SCDOT Aggregate No. 5; lay pipe; place stone in 6" layers to quarter-point of pipe, compacting by slicing with shovel; complete backfill complying with Section 31-20-00.
- f. Class D Bedding - Excavate bell holes in flat-bottomed trench; lay pipe; backfill complying with Section 31-20-00.

B. Drain stop:

1. Provide a drain stop at 100' intervals where pipe length is 1000' or less and 1000' intervals where length is greater than 1000' for Class B (Type 2) and Class C (Types 1 and 2) bedding.
2. Drain stop to consist of compacted cohesive clay 2'-0" minimum length at top of bedding material with side slopes no greater than 1:1 to trench bottom.
3. Remove water from excavation prior to placing drain stop.

C. Pipe laying:

1. General:
 - a. Protect pipe during handling against shocks and free fall. Remove extraneous material from the pipe interior.
 - b. Lay pipe by proceeding upgrade with the spigot ends of bell-and-spigot pipe pointing in direction of flow.
 - c. Lay each pipe accurately to the indicated line and grade, aligning so the sewer has a uniform invert.
 - d. Continually clear interior of the pipe free from foreign material.
 - e. Before making pipe joints, clean and dry all surfaces of the pipe to be joined.
 - f. Use gasket lubricants as recommended by the pipe manufacturer.
 - g. Place, fit, join and adjust the joints to obtain the degree of water tightness required.

3.4 CONNECTIONS TO EXISTING SYSTEM

- A. At existing manhole tie-ins, temporarily block and/or divert sewage flows, perform other miscellaneous work.
 1. Use high-early strength cement for mortar, forming proper channels with minimum interruption to service of the existing sewer.

3.5 SERVICE LINES

- A. Connect to street sewers using wye branches and ells as indicated on the plans.
- B. Do not stack service lines vertically over the sewer main.
- C. Provide sufficient fittings to route piping without bending the pipe sections.
- D. The Contractor is responsible for coordinating with the property owner and the utility owner's representative to determine the depth and location of both the sewer line connection and clean out to best provide a sewer service connection point for the property being served.

- E. The Contractor is responsible for locating service lines to avoid conflicts with existing utilities and exposure of line in ditches.

3.6 CLEANOUTS

- A. Secure the Engineer's approval of locations for cleanouts in finished areas prior to installation.
- B. Pour 4" concrete protection pad around cleanout.

3.7 INSPECTIONS AND TESTING

A. General:

1. All sewers will be visually inspected, tested and gauged for infiltration and/or exfiltration.
2. All visible leaks shall be repaired even if infiltration is within allowable limits.
3. Broken or cracked pipe, mislaid pipe and other defects shall be corrected.
4. All repairs, relaying of sewers, etc., required to bring the sewers to specified status shall be made at no additional cost to the Owner.
5. Expense of all testing will be borne by the Contractor.

B. Construction observation:

1. Clean and prepare for observation each block or section of sewer upon completion, or at such other time as the Engineer may direct.
2. Each section between manholes shall show a full circle of light when viewed from either end.

C. Deflection tests:

1. Perform deflection tests on all PVC pipe in the presence of the Engineer.
2. No pipe to exceed a deflection of 5%.
3. Conduct deflection testing after the final backfill, and compaction thereof, has been in place at least thirty (30) days and prior to placing the sewer lines into operation.
4. Conduct the deflection tests using a rigid ball or mandrel having a diameter equal to 95% of the inside diameter of the pipe.
5. Do not use mechanical pulling devices for the deflection tests.

END OF SECTION 333000

SECTION 334000 – STORM DRAINAGE UTILITIES

PART 1 – GENERAL

1.1 SECTION INCLUDE

- A. Construction of pipes, drainage inlets, manholes, headwalls, and various drainage structures.

1.2 RELATED SECTIONS

- A. Section 03 00 00 –Concrete

1.3 OPTIONS

- A. The bid form and specifications describe several pipe materials. Owner will select the one to be used. Where manufacturers of material or equipment are named in the specifications, Contractor may use equipment or materials of other manufacturers provided they are reviewed and accepted by Engineer as equivalent to those specified.

1.4 QUALITY ASSURANCE

- A. Material Review – Contractor will furnish the Engineer and Owner a description of all material before ordering. Engineer will review the Contractor's submittals and provide in writing an acceptance or rejection of material.
- B. Manufacturer – Material and equipment shall be standard products of a manufacturer who has manufactured them for a minimum of 2 years and provides published data on their quality and performance.
- C. Subcontractor – A subcontractor for any part of the work must have experience on similar work, and if required, furnish Engineer with a list of projects and Owners or Engineers who are familiar with their competence.
- D. Design – Devices, equipment, structures and systems not designed by Engineer and Contractor wishes to furnish, shall be designed by either a Registered Professional Engineer or by someone the Engineer accepts as qualified. If required, complete design calculations and assumptions shall be furnished to the Engineer or Owner before ordering.
- E. Testing Agencies – Soil tests shall be taken by a testing laboratory operating in accordance to ASTM D-3740 and E-329 and be acceptable to the Engineer prior to engagement. Mill certificates of tests on materials made by manufacturers will be accepted provided the manufacturer maintains an adequate testing

laboratory, makes regularly scheduled tests, spot checked by an outside laboratory and furnishes satisfactory certificates.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Material shall be unloaded in a manner avoiding damage and shall be stored where it will be protected and will not be hazardous to traffic. Contractor shall repair any damage caused by the storage. Material shall be examined before installation. Neither damaged nor deteriorated material shall be used in the work.

1.6 SEQUENCING AND SCHEDULING

- A. Contractor shall arrange work so sections of pipes between structures are backfilled, checked, pavement replaced and the section placed in service as soon as reasonable after installation.

1.7 ALTERNATIVES

- A. The intention of these specifications is to produce the best system for the Owner. If Contractor suggests alternate material, equipment or procedures will improve results at no additional cost, the Engineer and Owner will examine suggestion, and if accepted, it may be used. The basis upon which acceptance of an alternate will be given is its value to Owner and not for Contractor's convenience.

1.8 GUARANTEE

- A. Contractor shall guarantee quality of materials, equipment and workmanship for a minimum period of 12 months or as required by the local governing agency after acceptance. Defects discovered during this period shall be repaired by Contractor at no cost to the Owner.

1.9 EXISTING UTILITIES

- A. All known utility facilities are shown schematically on the construction drawings, and are not necessarily accurate in location as to plan or elevation. Utilities such as service lines or unknown facilities not shown, will not relieve the Contractor of responsibility under this requirement. "Existing Utilities Facilities" means any utility existing on the project in its original, relocated or newly installed position. Contractor will be held responsible for cost of repairs to damaged underground facilities; even when such facilities are not shown on the drawings.

- B. The Contractor shall call for underground utility locations before starting work. Underground utilities location service can be contacted at 1-888-721-7877 (SC).

1.10 TESTING

- A. Laboratory tests for moisture density relationship for fill materials shall be in accordance with ASTM D 1557, (Modified Proctor).
- B. In place density tests in accordance with ASTM D 1556 or ASTM D 6938.
- C. Testing laboratory shall operate in accordance with ASTM D 3740 and E 329 and be acceptable to the Engineer.
- D. Testing laboratory and Project Engineer/Project Representative shall be given a minimum of 48-hours notice prior to taking any tests.
- E. Owner shall select and engage the testing laboratory. Testing laboratory shall be responsible to the Owner and Owner's Engineer. Payment for laboratory and all tests shall be by Owner, except Owner specifically reserves the right to deduct from Contractor's payment, expenses and charges of testing laboratory when:
 - 1. Contractor gives notice work is ready for inspection and testing, and fails to be ready for the test, and/or
 - 2. testing of the Contractor's work, products, or materials fail, and retesting is required, and/or
 - 3. Contractor abuses the services or interferes with work of testing laboratory in conduct of this work.
- F. Test results shall be furnished to the Engineer prior to continuing with associated or subsequent work.

PART 2 – PRODUCTS

2.1 PIPE

- A. High density polyethylene pipe (HDPE):
 - a. Manufacture from High Density Polyethylene (HDPE) virgin compounds conforming to cell classifications as listed in AASHTO M-252 and M-294, Type S, MP7-97 (Type D and DP).
 - b. Form with annular corrugation, conforming to AASHTO M-294.
 - c. Furnish a Certificate of Compliance to the Engineer for each type of plastic pipe furnished.

- d. Provide integrated bell and spigot joints with ASTM F-477 rubber gasket on spigot end.

B. Polyvinyl Chloride (PVC) Pipe:

1. Pipe to comply with ASTM D2665 for schedule 40 PVC pipe.
2. Provide all necessary fittings for proper installation of system.
3. Use elastomeric gasket joints, providing watertight seal.
4. Furnish pipe in 12.5 or 20-foot lengths.
5. Product marking shall include manufacturer, size, material, and pipe schedule.

C. Concrete Pipe – Shall be reinforced Class III, Class IV, or Class V and shall conform to ASTM Specification C-76. Pipe less than 48 inch inside diameter shall be manufactured without lifting holes. Joints shall be either ‘O’ ring watertight flexible rubber, or tongue and groove as indicated on the plans. Gasketed single offset joints may be used in lieu of ‘O’ ring joints if acceptable to the Engineer.

6. ‘O’ Ring Joints – Shall be water tight flexible rubber gasket and shall meet ASTM Specification C-443.
7. Gasketed single offset joint shall be soil tight and shall meet ASTM Specification C-443.
8. Tongue and groove joints shall utilize mastic sealant and the exterior shall be wrapped with geotextile material.

D. Subgrade Drain – Shall be heavy duty corrugated polyethylene perforated pipe manufactured by Advanced Drainage Systems (ADS) or equivalent and shall conform to ASTM F-405.

2.2 DRAINAGE STRUCTURES

A. Nyloplast Drainage Structures, as shown on the construction plans. Or approved equal.

B. Concrete – Reinforced and non-reinforced.

1. Minimum compressive strength = 3,000 p.s.i. at 28 days.
2. Reinforcing shall be covered by a minimum 1 inch of concrete for top slabs and 1-1/2 inches for walls and bases and 3 inches where concrete is deposited directly against the ground.

3. Expansion joint filler materials shall conform to ASTM D 1751 or D 1752.

- C. Mortar – Connection of pipe and drainage structures shall be composed of one part by volume of Portland cement and two parts of sand. The Portland cement shall conform to ASTM C–150, Type I or II. The sand shall conform to ASTM C–144 and shall be of an accepted gradation. Hydrated lime may be added to the mixture of sand and cement in an amount equal to 25% of cement volume used. Hydrated lime shall conform to ASTM C–207, Type S. Quantity of water in the mixture shall be sufficient to produce a workable mortar, but shall in no case exceed 7 gallons of water per sack of cement. Water shall be clean and free of harmful acids, alkalies and organic impurities. The mortar shall be used within 30 minutes from time ingredients are mixed with water.
- D. Frame, cover & grating: See construction plans

2.3 FILTER FABRIC

- A. Shall be a non–woven heat–bonded fiber of polypropylene and nylon filaments equivalent to Mirafi 140 N. The fabric shall be finished so filaments will retain their relative position with respect to each other. Fabric shall contain stabilizers and/or inhibitors added to the base plastic to make filaments resistant to deterioration due to ultraviolet and/or heat exposure. The product shall be free of flaws, rips, holes, or defects.

2.4 SOILS AND STONE AGGREGATES

- A. Stone aggregate shall be clean crushed granite or concrete meeting the gradation requirements of grade No. 57.
- B. Soils used for bedding, haunching, and initial backfill shall be as shown in the following table and shall meet requirements and classifications of ASTM D2321 and ASTM D2487.

Class	Type	Soil Group Symbol D 2487	Description	Percentage Passing Sieve Sizes		
				1-1/2 inch (40 mm)	No. 4 (4.75 mm)	No. 200 (0.075 mm)

IB	Manufactured, Processed Aggregates; Dense-graded, Clean	None	Angular, crushed stone (or other Class 1A materials) and stone/sand mixtures with gradations selected to minimize migration of adjacent soils; contain little or no fines.	100%	.50%	<5%
II	Coarse – Grained Soils, Clean	GW	Well-graded gravels and gravel-sand mixtures; little or no fines.	100%	<50% of “Coarse Fraction”	<5%
		GP	Poorly-graded gravels and gravel-sand mixtures; little or no fines.			
		SW	Well-graded sands and gravelly sands; little or no fines.		>50% of “Coarse Fraction”	
		SP	Poorly-graded sands and gravelly sands; little or no fines.			
Coarse-Grained Soils; borderline clean to w/fines.	Eg. GW-GC, SP-SM.	Sands and gravels that are borderline between clean and with fines.	100%	Varies	5% to 12%	
III	Coarse-Grained Soils with Fines	GM	Silty gravels, gravel-sand-silt mixtures.	100%	<50% of “Coarse Fraction”	5%
		GC	Clayey gravels, gravel-sand-clay mixtures.			
		SM	Silty sands, sand-silt mixtures.		>50% OF “Coarse Fraction”	
		SC	Clayey sands, sand-clay mixtures.			
IVA	Fine-grained soils (inorganic)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, silts with slight plasticity.	100%	100%	>50%
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.			

2.5 PRODUCT REVIEW

- A. Contractor shall provide the Engineer with a complete description of all products before ordering. Engineer will review all products by the submittal of shop drawings before they are ordered.

PART 3 – EXECUTION

3.1 ON SITE OBSERVATIONS OF WORK

- A. The line, grade, deflection, and infiltration of storm sewers shall be tested by Contractor under direction of Engineer. Owner's Representative or Engineer will have the right to require any portion of work be completed in their presence and if work is covered up after such instruction, it shall be exposed by Contractor for observation. However, if Contractor notifies Engineer such work is scheduled and the Engineer fails to appear within 48-hours, Contractor may proceed. All work completed and material furnished shall be subject to review by the Engineer or Project Representative. All improper work shall be reconstructed. All materials not conforming to requirements of specifications shall be removed from the work upon notice being received from Engineer for rejection of such materials. Engineer shall have the right to mark rejected materials to distinguish them as such.

Contractor shall give the Project Engineer or Project Representative a minimum of 48-hours notice for all required observations or tests. Storm sewers shall be dry for observation by the Engineer. Lines under water shall be pumped out by Contractor prior to observation, at no additional cost to the Owner.

It will also be required of Contractor to keep accurate, legible records of the location of all storm sewer lines and appurtenances. These records will be prepared in accordance with paragraph on "Record Data and Drawings" in the Special Conditions. Final payment to the Contractor will be withheld until all such information is received and accepted.

3.2 EXCAVATION FOR PIPE AND STRUCTIONS

- A. Excavated material shall be piled a sufficient distance from the trench banks to avoid overloading to prevent slides or cave-ins.
- B. Remove from site all material not required or suitable for backfill.
- C. Grade as necessary to prevent water from flowing into excavations.
- D. Remove all water accumulating in the excavation, from surface flow, seepage, or otherwise, by pumping or other acceptable method.
- E. Sheetting, bracing or shoring shall be used as necessary for protection of the work and safety of personnel.

3.3 TRENCHING FOR PIPE

- A. Trenching for Pipe – The width of trenches at any point below top of pipe shall be not greater than outside diameter of pipe plus 4 feet to permit satisfactory jointing and thorough bedding, haunching, backfilling and compacting under and around pipes. Sheetting and bracing where required shall be placed within the

trench width as specified. Care shall be taken not to over-excavate. Where trench widths are exceeded, redesign with a resultant increase in cost of stronger pipe or special installation procedures shall be necessary. Cost of this re-design and increased cost of pipe or installation shall be borne by Contractor without additional cost to the Owner. When installing pipe in a positive projecting embankment installation, the embankment shall be installed to an elevation of at least 1 foot above top of pipe for a width of five pipe diameters on each side of pipe before installation of pipe.

- B. Removal of Unsuitable Material – Where wet or otherwise unstable soil, incapable of supporting the pipe is encountered in bottom of trench, such material shall be removed to depth required and replaced to proper grade with stone or sand foundation as determined by Engineer. This foundation shall be compacted to 95% modified proctor.

3.4 PROTECTION OF UTILITY LINES

- A. Existing utility lines shown on drawings or locations of which are made known to the Contractor prior to excavation, and are to be retained, as well as utility lines constructed during excavation operations, shall be protected from damage during excavation and backfilling, and if damaged, shall be repaired at Contractor's expense. If the Contractor damages any existing utility lines not shown on drawings or locations of which are not known to Contractor, report thereof shall be made immediately. If Engineer determines repairs shall be made by Contractor, such repairs will be ordered under the clause in GENERAL CONDITIONS of contract entitled "CHANGES." When utility lines to be removed are encountered within the area of operations, Contractor shall notify Engineer in ample time for necessary measures taken to prevent interruption of service.

3.5 FOUNDATION AND BEDDING

- A. Stone Foundation – Where the subgrade of pipe is unsuitable material, Contractor shall remove unsuitable material to a depth determined by Engineer or Geotechnical Consultant and furnish and place stone foundation in trench to stabilize subgrade.
- B. Sand Foundation – Where the character of soil is unsuitable, even though dewatered, additional excavation to a depth determined by Engineer or Geotechnical Consultant shall be made and replaced with clean sand furnished by Contractor.
- C. Bedding for pipe shall provide a firm surface of uniform density throughout the entire length of pipe. Before laying pipe, trench bottom shall be de-watered by

the use of well points. Where well points will not remove the water, Contractor shall construct sumps and use pumps to remove all water from bedding surface. Pipe shall be carefully bedded in stone accurately shaped and rounded to conform to lowest 1/3 outside portion of circular pipe, or lower curved portion of arch pipe for the entire length of pipe. Bell holes and depressions for joints shall be only of such length, depth, and width as required for properly making the particular type joint.

D. HDPE: Conform with standard specifications from supplier.

E. Concrete Pipe:

1. Materials for bedding concrete pipe shall be either Class II, Class III, or Class IB if processed, to minimize migration of adjacent material.
2. Depth of bedding shall be equal to 1/24 the outer diameter of pipe or 3 inches, whichever is greater.
3. Bedding area under the center of pipe, for a width 1/3 outer diameter of pipe, known as middle bedding, shall be loosely placed. Remainder of bedding for full width of the trench shall be compacted to a minimum density of 85% for Class II bedding and 90% for Class III bedding as determined by ASTM D1557.

F. Polyethylene

1. Materials for bedding polyethylene and corrugated aluminum alloy pipe shall be either Class II, Class III, or Class IB if processed to minimize migration of adjacent materials.
2. Depth of bedding shall be equal to 1/10 the outer diameter of pipe or a minimum of 6 inches, whichever is greater.
3. Bedding area under the center of pipe, for a width 1/3 outer diameter of pipe, known as middle bedding, shall be loosely placed. Remainder of bedding for full width of the trench shall be compacted to a minimum density of 90% for Class II bedding and 95% for Class III bedding.

3.6 HAUNCHING, INITIAL BACKFILL, AND FINAL BACKFILL

- A. Haunching – After the bedding has been prepared and pipe is installed, Class II or Class III soil shall be placed along both sides of pipe, in layers not exceeding 6 inches in compacted depth. Care shall be taken to insure thorough compaction and fill under haunches of the pipe. Each layer shall be thoroughly compacted

with mechanical tampers and rammers. Haunching shall extend up to the spring line of pipe and be compacted to following densities:

1. RCP: Minimum density shall be 90% as determined by ASTM D1557.
 2. HDPE: Minimum density shall be 95% as determined by ASTM D1557.
- B. Initial Backfill – HDPE and corrugated aluminum alloy pipe require initial backfill material of either Class II or Class III soils to be placed from the spring line to a minimum of 6 inches above top of pipe in 6 inch lifts. This initial backfill shall be compacted to a minimum density of 95% as determined by ASTM D1557. Reinforced concrete pipe does not specifically require initial backfill. Initial backfill for reinforced concrete pipe can be the same as final backfill.
- C. Final Backfill – For all pipes, it should extend to the surface and shall be select materials compacted to a minimum of 98% as determined by ASTM D1557 if pipe is under pavement. If pipe is in grassed areas final backfill may be native materials compacted to a minimum density of 90% as determined by ASTM D1557.

3.7 PLACING PIPE

- A. Each pipe shall be carefully examined before being laid, and defective or damaged pipe shall not be used. Pipe lines shall be laid to the grades and alignment indicated. Proper facilities shall be provided for lowering sections of pipe into trenches. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when trench conditions or weather are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary. All pipe in place shall have been checked before backfilling. When storm drain pipe terminates in a new ditch, headwall or end section, together with ditch pavement, if specified, shall be constructed immediately as called for on the plans. Ditch slopes and disturbed earth areas shall be grassed and mulched as required. Contractor will be responsible for maintaining these newly constructed ditches and take immediate action subject to acceptance, keeping erosion of the ditch bottom and slopes to a minimum during life of contract. No additional compensation will be given to Contractor for the required diversion of drainage and/or dewatering of trenches. Grassing the trench backfill shall conform to requirements of Section 32 92 00 – “Turf and Grasses.”
- B. Concrete Pipe: Laying shall proceed upgrade with spigot ends of bell and spigot pipe and tongue ends of tongue and groove pipe pointing in the direction of flow. Place pipe in trench with the invert conforming to required elevations, slopes and

alignment. Provide bell holes in pipe bedding in order to insure uniform pipe support. Fill all voids under the pipe by working in backfill material.

- C. Polyethylene Pipe – Laying shall proceed upgrade with spigot ends of bell and spigot pipe pointing in the direction of flow. Place pipe in trench with the invert conforming to required elevations, slopes, and alignment. Provide bell holes in pipe bedding in order to ensure uniform pipe support. Fill all voids under the pipe by working in bedding material. Pipe shall be installed in accordance with ASTM D-2321.

3.8 JOINTS IN PIPE

- A. Concrete Pipe – Joints in concrete pipe shall be either ‘O’ ring watertight flexible rubber or tongue and groove as indicated on the plans. Gasketed, single offset joints may be used if accepted by the Engineer. Maintain pipe alignment and prevent infiltration of fill material at joints during installation.
 - 1. ‘O’ ring and single offset joints shall meet the requirements of ASTM C443. They shall utilize either a rubber gasket with a circular cross section or a rectangular cross section. Gaskets shall have no more than one splice, except two splices of the gasket will be permitted if nominal diameter of pipe exceeds 54 inches. Manufacturer’s recommendations and requirements shall be followed.
 - 2. Tongue and groove joints shall utilize a bituminous mastic such as Ram-Nek or accepted equivalent. The joint surfaces shall be primed according to manufacturer’s recommendations. Care shall be taken to ensure mastic material completely and uniformly seals the joint.
 - 3. All tongue and groove joints shall receive one layer of filter fabric completely around exterior of the joint. Filter fabric shall be a minimum of 2 feet wide, centered on the joint, and overlapped a minimum of 1 foot.
- B. Polyethylene Pipe – Maintain pipe alignment and prevent infiltration of fill material at joints during installation
 - 1. Joints shall be gasketed soil-tight and water-tight bell and spigot meeting ASTM F2306. Gaskets shall meet the requirements of ASTM F477. A joint lubricant supplied by manufacturer shall be used on the gasket and bell during assembly. Spigot end of pipe shall be inserted into bell using methods recommended by the manufacturer. Pipe shall be kept true to line and grade during assembly.

2. Installation of Filter Fabric at Joint – All polyethylene pipe joints shall receive one layer of filter fabric completely around exterior of the joint. Filter fabric shall be a minimum of 2 feet wide, centered on the joint, and overlapped a minimum of 1 foot.

3.9 FIELD QUALITY CONTROL

- A. Soil and density tests shall be made by a testing laboratory acceptable to the Engineer and shall be made at Contractor's expense. Laboratory tests of the soil shall be made in accordance with ASTM D 1557. In-place density tests shall be made in accordance with ASTM D 6938. Results of tests shall be furnished to the Engineer.

- B. It is the Contractor's responsibility to assure backfill is sufficient to limit pipe deflection to no more than 5%. When flexible pipe is used, a deflection test shall be made by the Contractor on entire length of installed pipeline, not less than 30-days after completion of all backfill and placement of any fill. Deflection shall be determined by use of a deflection device or by use of a spherical, spheroidal, or elliptical ball, a cylinder, or circular sections fused to a common shaft. The ball, cylinder, or circular sections shall have a diameter, or minor diameter as applicable, of 95% of inside pipe diameter. The ball, cylinder, or circular sections shall be of a homogeneous material throughout, shall have a density greater than 1.0 as related to water at 39.2 degrees F, and shall have a surface brinell hardness of not less than 150. The device shall be center bored and through bolted with a 1/4 inch minimum diameter steel shaft having a yield strength of 70,000 p.s.i. or more, with eyes at each end for attaching pulling cables. The eye shall be suitably backed with flange or heavy washer; a pull exerted on opposite end of shaft shall produce compression throughout remote end of ball, cylinder, or circular section. Circular sections shall be spaced so the distance from external faces of front and back sections shall equal or exceed diameter of circular section. Failure of the ball, cylinder, or circular section to pass freely through a pipe run, either by being pulled through by hand or by being flushed through with water, shall be cause for rejection of a run. When a deflection device is used for the test in lieu of a ball, cylinder, or circular sections described, such device shall be given acceptance prior to use. Device shall be sensitive to 1.0% of pipe diameter being measured and shall be accurate to 1.0% of the indicated dimension. Installed pipe showing deflections greater than 5% of normal pipe diameter shall be retested by a run from the opposite direction. If retest also fails, the suspect pipe shall be repaired or replaced at no cost to Owner.

- C. 50% of pipes under roadways shall be televised and video recorded. The video observation shall include a complete pan view of each joint. If the video observation indicates problems, further televising may be required. Additional televising and video recording will be at no additional cost to the Owner.

3.10 DRAINAGE STRUCTURES

- A. Drainage structures shall be constructed of materials specified for each type and in accordance with details shown on the drawings.

END OF SECTION