

BID DOCUMENTS AND TECHNICAL SPECIFICATIONS

TOY FIELDS SIDEWALKS
IFB 2017-13

for

Town of Bluffton
Beaufort County, South Carolina

Aug, 2016



Prepared by:

HUSSEY GAY BELL

— *Established 1958* —

TABLE OF CONTENTS

	<u>PAGE NUMBERS</u>
<u>PART I - BIDDING REQUIREMENTS</u>	
Notice to Contractors and Invitation/Advertisement for Bids	2 Pages
Instructions and Information for Bidders	4 Pages
Bid Proposal	4 Pages
<u>PART II - CONTRACT FORMS</u>	
Contract Form	9 Pages
<u>PART III- SPECIFICATIONS</u>	
<u>GENERAL REQUIREMENTS</u>	31 Pages
01002 General and Special Conditions	01002-1 thru 01002-14
01150 Measurement and Payment	01150-1 thru 01150-2
02100 Clearing and Grubbing	02100-1
02200 Excavation, Filling and Grading	02200-1 thru 02200-7
02210 Erosion Control	02210-1 thru 02210-2
02480 Grassing and Sodding	02480-1 thru 02480-2
02520 Concrete Sidewalks, Curb and Gutter	02520-1 thru 02520-3



NOTICE TO CONTRACTORS AND
INVITATION/ADVERTISEMENT FOR BIDS

Sealed bids will be received by the Town of Bluffton for the Buck Island-Simmons ville Sidewalks (Village Renaissance), and they are due by **2:00 p.m.** (Local Time) on **September 15, 2016** at Town Hall, P.O. Box 386, 20 Bridge Street, Bluffton, South Carolina (29910) at which time they will be publicly opened and read. Bids shall be clearly marked as **IFB 2017-13 - Buck Island - Simmons ville Sewer Extension (Phase Three) Sidewalk Construction"**. **O f f e r o r s** shall submit two (2) original and two (2) copies by the stated deadline. The work under this Contract will consist generally of the following:

Sidewalk extensions along Buck Island Road, Toy Fields Community

The Plans and Specifications are available for inspection on the Town of Bluffton's website (www.townofbluffton.sc.gov). Look under the "Bid Opportunities" section at the top of the web page.

All questions concerning the Plans, Specifications, and other Contract Documents shall be directed to Jeff Wiggins at the Town of Bluffton by email at jwiggins@townofbluffton.com. All questions must be submitted no later than **September 12, 2016**.

Bidders on this Work will be required to comply with the President's Executive Order No. 11246 and Order No. 11375 which prohibit discrimination in employment regarding race, creed, color, sex or national origin.

Bidders must comply with Title VI of the Civil Rights Act of 1964, the Davis-Bacon Act, the Anti-Kickback Act, the Contract Work Hours and Safety Standards Act, and 40 CFR 33.240.

Bidder must make positive efforts to use small and minority owned businesses.

Attention of bidders is particularly called to the requirements as to the conditions of employment to be observed and minimum wage rates to be paid under the contract.

Any prospective bidder, offeror, contractor or subcontractor who is aggrieved in connection with the solicitation of this contract may protest to Owner (Town of Bluffton) in accordance with Section 27 of the Town of Bluffton Purchasing Ordinance within 15 days of the date of issuance of the Notice of Intent to Award.

No bid will be considered unless the bidder is legally qualified under the provisions of the South Carolina Contractor's Licensing Law (South Carolina Code of Laws as amended on April 1, 1999, Chapter 11, Sections 40-11-10 through 40-11428).

The successful bidder must furnish proof that they have an appropriate State of South Carolina Contractor's License and a Town of Bluffton Business License before a contract will be executed.

Bids must be signed by an official of the company authorized to bind the offeror, and it shall contain a statement that the proposed price is good for a period of at least ninety (90) days from the Bid opening date.

The Town reserves the right to refuse any or all bids and to waive any technicalities and formalities. The Town reserves the right to negotiate with all qualified offerors. The Town may cancel this solicitation in part or in its entirety if it is in the Town's best interest to do so.

This solicitation does not commit the Town to award a contract, or to pay for any cost incurred in the preparation of your bids, or to procure or contract for any articles of goods or services.

The Town does not discriminate on the basis of race, color, national origin, sex, religion, age or disability in employment or in the provision of goods or services.

INSTRUCTIONS AND INFORMATION FOR BIDDERS

1. BASIS OF CONTRACT:

See Invitation/Advertisement for Bids and proposal form.

2. BID SECURITY:

No Bid Bond is required for this project.

3. CONTRACTOR'S LICENSE:

All contractors wishing to bid on this project must have obtained a "Contractor License" and "Contractor License Number" from the state of South Carolina. All work to be included in this project shall be done by a licensed contractor. The successful bidder must furnish proof that they have a State of South Carolina Contractor's License and Town of Bluffton Business License before a contract will be executed.

4. PRE-BID CONFERENCE:

No pre-bid conference for this project will be held. All requests for interpretation or additional information shall be presented in the format outlined in Para. 5 of this section.

5. INTERPRETATIONS:

No oral interpretation will be made to bidders as to the meaning of the Plans and Specifications. Requests for interpretation of Plans and Specifications must be made in writing to Mr. Jeff Wiggins at the Town of Bluffton, P.O. Box 386, Bluffton South Carolina (29910), or by e-mail at jwiggins@townofbluffton.com no later than seven (7) days prior to the date set for receipt of proposals, and failure on the part of the successful bidder to do so shall not relieve him as Contractor of the obligation to execute such work in accordance with a later interpretation by the Engineer. All interpretations made to bidders will be issued in the form of addenda to the plans and specifications and will be sent to all bidders. Such addenda are to be covered in the proposal, and in closing the Contract they will become a part thereof.

6. BIDDERS TO INVESTIGATE:

Bidders are required to submit their proposals upon the following express conditions, which shall apply to and become part of every bid received, viz:

Each Bidder must satisfy himself and form his own opinion by personal examination of the location and ground of the proposed work, and by such other means as he may desire, as to the actual conditions and requirements of the work, including the materials to be excavated; must make his own interpretations and satisfy himself by his own investigations and research regarding labor and materials needed, and shall make his bid in sole reliance thereon. Any information or data furnished by the Owner or its employees for the convenience of any bidder is not guaranteed.

7. PROPOSALS:

Proposals will be opened and read as stated in the Invitation/Advertisement for Bids.

All bids must be submitted on the Bid Proposal Form furnished to the Bidder as a part of these documents and must be signed. All blanks on the proposal form must be filled in. Numbers shall be written in English words and in Arabic Numerals, and the completed form shall be without interlineation, alteration, or erasure. Failure to submit a proposal in the form requested or the inclusion of any condition, alternate, limitation or provision not called for will render the bid irregular and shall be considered sufficient cause for rejection of a bid. Failure to complete entries in all blanks in the proposal form shall be considered sufficient cause for rejection of a proposal. If the bidder is not currently able to complete the work described in the Plans and Specifications but would like to be considered for future work in the Town of Bluffton, the bidder may submit a Bid Proposal with the terms "NO BID". A "NO BID" Bid Proposal will be considered a responsive bid.

All addenda issued shall be acknowledged in the place so designated. All alternates, if any, shall be bid on; the term "no bid" shall not be used. In the event that the Bidder does not desire to make a change in price from his Base Bid for any given alternate, he shall so indicate by using the words "no change." Proposals shall close with legal name of Bidder and be executed by one legally authorized to bind the bidding firm to a contract.

A proposal cannot be withdrawn after it is filed, unless Bidder makes written request to the Owner prior to time set for opening of bids, or unless the Owner fails to accept bid within 90 days after date fixed for opening of bids. The successful bidder must be able to provide a Payment Bond and Performance Bond within 10 days of notice to award. Samples of such bonds are contained herein and shall be in the amount of 100% of the value of the Base Bid.

Submittal: The Proposal, in duplicate, and a single copy of the Bid Security together with the Power of Attorney shall be contained in a sealed envelope bearing the Bidder's name and utility contractor's license number clearly addressed to the Owner as indicated on the Proposal Form. In addition, in large letters on both the front and back of the envelope, the following shall appear: "PROPOSAL FOR CONSTRUCTION. DO NOT OPEN UNTIL (INSERT TIME) O'CLOCK, (INSERT DATE)" not later than the date and hour named therein. After that time, no proposals will be received or withdrawn.

8. FORM OF AGREEMENT:

Form of Agreement will be on the enclosed Form in the Bid Documents.

9. AWARD:

The Owner's intent is to make an award within funds available to the lowest responsible bidder furnishing satisfactory performance surety.

The Owner reserves the right to reject any or all bids and to waive technicalities and informalities.

The Owner reserves the right to select the alternates to be used in determining the lowest bid. If such bid exceeds available funds, the Owner may reject all bids. The Owner will decide which is the lowest qualified bidder, and in determining such bidder, the following elements will be considered for each bidder:

- a. Maintains a permanent place of business.
- b. Has adequate plant, equipment and personnel to perform the work properly and expeditiously.
- c. Has suitable financial status to meet obligations incident to the work.
- d. Has appropriate technical experience.

Awards shall be made only to responsive and responsible contractors who possess the ability or have access to resources to perform successfully under the terms and conditions of proposed procurement. Consideration must be given to such matters as contractor integrity, compliance with public policy, record of past performance, financial, and technical resources.

10. CONTRACTOR TO BE SATISFACTORY TO OWNER:

The Contract will not be awarded to any bidder or bidders who have failed in any contractual obligations to the Owner, or who has on any previous contract performed in a manner unsatisfactory to the Owner, either as to the character of the work, the fulfillment of guarantees or the time consumed in its completion.

One or more bidders shall, upon written request and prior to the letting of the contract, furnish the owner with the following information relative to his own business and that of each of the subcontractors named in his Bid Proposal.

- (a) A statement of his experience, including a list of projects for which he or his firm was a responsible contractor or subcontractor; such lists shall indicate the name or identification and location of each project, the year it was completed, a brief description and the approximate dollar value of the work for which he was responsible.
- (b) A statement of experience of each subcontractor named in his Bid Proposal; each statement shall include a list of projects for which the named subcontractor was a responsible contractor or subcontractor; such lists shall include the name or identification and location of each project, the year it was completed, a brief description and the approximate dollar value of the work for which the named subcontractor was responsible.
- (c) The amount of capital and equipment the Bidder has available for the work of the project.

- (d) The amount of capital and equipment each of the named subcontractors has available for the work of the project.
- (e) A statement showing the financial assets and liabilities of the Bidder, certified to by a Certified Public Accountant.
- (f) A statement from each of the named subcontractors showing his assets and liabilities, certified by a Certified Public Accountant.

11. LIQUIDATED DAMAGES:

Liquidated damages as set forth in the Bid Proposal will be assessed for each consecutive calendar day of delay in the completion of the work not excusable as provided in the Special Conditions (Section 01002) and the Bid Proposal.

12. SURETY AND INSURANCE COMPANIES:

The Contract provides that the surety and insurance companies must be acceptable to the Owner. To avoid inconvenience, any bidder or subcontractor should confer with the Owner to determine whether the surety or insurance companies expected to be used on the work are acceptable to the Owner.

BID PROPOSAL

TOWN OF BLUFFTON
P.O. BOX 386
BLUFFTON, SOUTH CAROLINA 29910

ATTENTION: MR. JEFF WIGGINS
 PROJECT MANAGER

PROJECT TITLE: TOY FIELDS SIDEWALKS

SUBMITTED BY: _____

Gentlemen:

Having carefully examined the Plans, Specifications and other Contract Documents relating to the project, dated January 2016 (See Section 01002 , Para. 24 for latest revision dates.) and Addendum No.(s) _____, and also having carefully inspected the premises and the conditions affecting the work, the undersigned hereby proposes and agrees to furnish all materials, labor skill, equipment, tools and other things of every kind and description specified, needed or used for the complete execution of all work covered by and in conformity with the aforesaid Plans, Specifications and other Contract Documents prepared by HUSSEY GAY BELL (hereinafter called the "Engineer") for the Town of Bluffton (hereinafter called the "Owner") and all Amendments and Addenda thereto, for the sums hereinafter stated.

SCHEDULE OF BID PROPOSAL:

Bidder must fill in unit prices in figures, make extensions of each item and total as indicated. For complete information concerning these items, see Plans and Specifications.

BID PROPOSAL

Client: **Town of Bluffton**
 Date: January 1, 2016

Proj. Name: **Toy Fields Sidewalks**

Item #	Description	Estim. Qty.	Unit Price	Total Price
BASE BID				
1	Clearing and Grubbing, incl. street R/W, easements & other areas as shown on the plans	1	LS	
2	Grading and Project Miscellaneous shall include all grading, including off-site removal and replacement of unsuitable material, to meet the finished grades shown on the plans, and project staking, testing, insurance, bonds & all miscellaneous items not included elsewhere in this bid schedule to complete the project in accordance with the plans & specifications.	1	LS	
3	Silt Fence - Type "A"	1,100	LF	
4	Ditch Chk - Woven Fabric and Filter Media (9")	4	EA	
5	Ditch Chk - Woven Fabric and Filter Media (18")	3	EA	
6	Tree Protection (As Directed by Owner)	500	LF	
7	Grassing	1,400	SY	
8	5' Wide concrete sidewalk (3,000 psi)-4" thick	600	SY	
9	Concrete driveway (4,000 psi)-6" thick	55	SY	
10	12" RCP Class III	30	LF	

TOTAL

TOTAL IN WORDS: _____

For and in consideration of the sum of \$1.00, the receipt of which is hereby acknowledged, the Undersigned agrees that this proposal may not be revoked or withdrawn after the time set for the opening of bids but shall remain open for acceptance for a period of ninety days following such time.

In case he be notified in writing by mail, telegraph, or delivery of the acceptance of the Proposal within ninety days after the time set for the opening of bids, the Undersigned agrees to execute within ten days a Contract (Form of Agreement between Contractor and Owner) for the work for the above stated compensation and at the same time to furnish and deliver to the Owner a Performance Bond and Payment Bond in accordance with the instructions bound in the specifications, each in an amount equal to 100 percent of the contract sum.

The Undersigned agrees to commence actual physical work on the site with an adequate force and equipment within **10** days of a date to be specified in a written order from the Owner and to complete fully all work within **30** consecutive calendar days. The Undersigned Bidder agrees to pay to the Owner, Liquidated Damages as stated in the Special Conditions for each consecutive calendar day of delay in an amount not to exceed \$500 per day.

The Bidder submits the following statement of Bidder's qualifications.

BIDDER'S QUALIFICATIONS

NAME OF BIDDER _____

STREET ADDRESS _____

TELEPHONE NO. _____ FAX NO. _____

WHEN ORGANIZED _____

WHERE INCORPORATED _____

LICENSED TO DO BUSINESS IN THE STATE OF _____

The foregoing statement of qualifications is submitted under oath:

Respectfully submitted,

Name: _____

Mailing Address: _____

By: _____

Title: _____

The legal name of the Bidder is:

(Attach satisfactory evidence of the authority of the officer, or officers, signing on behalf of a corporation.)

GENERAL
REQUIREMENTS

SECTION 01002
GENERAL AND SPECIAL CONDITIONS

1. COMMENCEMENT AND COMPLETION OF WORK:

The Contractor shall commence work under this contract within **10 calendar days** after notice to proceed and shall diligently prosecute said work so as to complete the entire project and place it in use within **30 calendar days** after notice to proceed.

2. SCOPE OF THE WORK:

The work to be done hereunder includes the furnishing of all necessary machinery, equipment, tools, labor and other construction means, and all materials and equipment required to perform all work as set forth and called for by the Plans and Specifications and including the placing of the entire project into satisfactory operation.

3. LOCATION:

The work under this Contract will be located in Bluffton, South Carolina as shown on the Plans.

4. EXTENSION OF TIME AND FAILURE TO COMPLETE ON TIME:

Any and all extensions of time shall be in accordance with the General Conditions, except as otherwise hereinafter provided.

Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in paragraph 1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$500 for each day that expires after the time specified in paragraph 1 for Substantial Completion until the Work is substantially complete.

5. SANITARY REGULATIONS:

The Contractor shall provide adequate sanitary conveniences for use of those employed on the work and their use shall be strictly enforced. Such conveniences shall be made available when the first employees arrive on the site and shall be removed after the departure of the last employees from the job. The facilities shall be maintained at such points and in such manner as approved, and the Owner/Engineer shall have the right to inspect such facilities to determine whether or not sanitary requirements have been complied with.

6. ENVIRONMENTAL IMPACT:

The Contractor shall conduct all his operations so as to minimize, to the greatest extent possible, adverse environmental impact.

a) Noise.

All equipment and machinery shall be provided with exhaust mufflers maintained in good working order so as to reduce operating noise to minimum levels. In addition, operation of equipment and machinery shall be limited to daylight hours, except with the permission of the Engineer, based on critical need for the operation.

b) Dust/Smoke.

All equipment movements shall be accompanied by a minimum of dust. Traveled surfaces and earthwork shall be maintained in a moist condition to avoid the generation of dust or the airborne movement of particulate matter under all prevailing atmospheric conditions.

Burning operations will not be allowed by the owner or appropriate regulatory agency.

c) Traffic.

Trucks carrying spoil, fill, concrete or other material shall be routed over roads which will result in the least effect on traffic and nuisance to the public. All material shall be loaded in a manner which will preclude the loss of any portion of the load in transit, including covering, if necessary.

d) Siltation.

All points of concentrated runoff from rainfall shall be visually monitored to determine that no eroded material from the construction site is leaving the Owner's property. Measures shall be taken to promptly eliminate such a deposition if occurring, including the installation of detention basins.

7. STORAGE OF MATERIALS:

The Contractor shall arrange his plant and store his materials as compactly as practicable at points convenient for the Contractor and which do not damage the work or interfere with public activities or with work of other contractors or with free access to all parts of the site and to utility installations. Materials shall be so stored as to facilitate inspection and to insure preservation of their quality and fitness for use. They shall be placed on wooden platforms or other clean surfaces and not on the ground and shall be placed under cover. The Contractor shall provide the storage facilities subject to approval by the Owner (Town of Bluffton).

8. CONSTRUCTION STAKING:

The Engineer will provide benchmarks and baselines for horizontal and vertical control at the site of the work.

From the baselines and benchmarks established by the Engineer, the Contractor shall complete the layout of the work and shall be responsible for all measurements that may be required for the execution of the work prescribed in the specifications or on the Contract Plans, subject to such modifications as may be required to meet changed conditions or as a result of necessary modifications to the contract work. The Contractor shall exercise proper and reasonable care in verifying figures shown on the Drawings before laying out the Work and will be responsible for any error resulting from his failure to exercise such care.

The Contractor shall furnish, at his own expense, all such stakes, spikes, steel pins, templates, platforms, equipment, instruments, tools and material and all labor including instrument, rodmen, chainmen, etc., as may be required in laying out any part of the work from the baselines and benchmarks established by the Engineer.

It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Engineer until authorized to remove them, and if such marks are destroyed by the Contractor or through his negligence prior to their authorized removal, they may be replaced by the Engineer at his discretion, and the expense of replacement will be deducted from any amounts due or to become due the Contractor.

All survey data shall be recorded in accordance with standard and approved methods. All field notes, sketches, records and computations made by the Contractor in laying out the work shall be available at all times during the progress of the work for the ready examination by the Owner/Engineer or his duly authorized representative.

The Owner/Engineer may make original and final surveys and make computations to determine the quantities of work performed or finally in place, if required.

The Contractor shall make such surveys and computations as are necessary to determine the quantities of work performed or placed during each period for which a progress payment is to be made. All original field notes, computations and other records, or facsimile copies thereof, taken by the Contractor for the purpose of construction and for progress surveys, shall be furnished promptly to the representative of the Owner/Engineer for permanent records and for determining the proper amount of progress payments due to the Contractor. Unless waived in each specific case, quantity surveys made by the Contractor shall be made during the presence of a representative of the Engineer.

The Owner/Engineer may make checks as the work progresses to verify lines and grades established by the Contractor and to determine the conformance of the completed work as it progresses with the requirements of Contract Specifications and Plans. Such checking by the Owner/Engineer or his representative shall not relieve the Contractor of his responsibility to perform all work in accordance with the Contract Plans and Specifications and the lines and grades given therein. In the event that location marks as established by the Contractor are found to be inaccurate or inadequate, work shall be suspended until corrections have been made.

No separate payment will be made for the costs involved in the survey work, layout work or staking performed by the Contractor. All such costs will be considered as incidental to the Contract.

9. UTILITIES:

Utilities such as sewer, water, gas, phone, cable television, irrigation, and electric lines encountered in the work shall be protected from injury and maintained in service until moved or replaced as required under this Contract or by others as the case may be, or abandoned as may be necessary for the proper construction and use of the new work. The Contractor is responsible for all coordination with appropriate utility owners and replacement of any damaged utility at no additional cost to the Owner.

10. ADJUSTMENT OF DISCREPANCIES:

In all cases of discrepancies between the various dimensions and details shown on drawings, or between the drawings and these specifications, the more expensive construction shall be estimated before construction is started; the matter shall be submitted to the Owner/Engineer for clarification. Without such a decision, discrepancies shall be adjusted by the Contractor at his own risk and in settlement of any complications arising from such adjustment; the Contractor shall bear all of the extra expense involved.

11. TESTING:

All tests/inspections shall be the responsibility of the Contractor. Testing shall be conducted as required in the various sections of these specifications, in accordance with the following:

a) Mill Tests.

Mill tests, if any, shall be conducted and reports submitted as specified for such material. Mill or shop tests shall be accomplished by the manufacturer or supplier of the materials, and may be conducted by an independent testing laboratory. These tests shall be performed in accordance with the ASTM Standard, if specified, or with other applicable standards.

The cost of mill tests shall be included in the lump sum or unit price bid, and no additional payment will be made.

b) Laboratory Tests.

Laboratory tests shall be conducted and test reports submitted where this type of test is specified. All laboratory tests shall be made by an approved independent laboratory. These tests shall be performed in accordance with ASTM Standards, if specified or other applicable standards if no reference is included.

The Contractor shall arrange for all tests of preliminary samples of materials and mixtures, in order to determine suitability of source and for initial design mixes of concrete. The cost of these preliminary tests shall be included in the lump sum or unit price of the contract and no additional payment will be made.

Routine tests of materials incorporated into the project will be performed by an approved independent testing laboratory. Samples shall be provided by the Contractor. The Contractor will pay for all concrete cylinder tests and preliminary tests to determine initial design mixes.

Soils tests for classification, gradation, moisture content and density will be paid for by the Contractor and will be included in the price for the appropriate item in the Bid Proposal for the number of tests specified in the technical sections of this Specification.

c) Field Tests.

Field tests of mechanical and electrical equipment, piping systems, electrical systems, control systems, ventilation systems, heating systems, water mains, pressure mains, sewers, drains, and similar facilities shall be conducted where this type of test is specified.

Field tests include determination of performance, capacity, efficiency, function, tightness, leakage or other special requirements. These tests shall be performed in accordance with applicable standards and test codes.

Field tests shall be set up and accomplished by the Contractor who shall provide all tools, equipment, instruments, personnel and other facilities required for the satisfactory completion of each test.

The cost of field tests shall be included in the lump sum or unit price for the appropriate item in the Bid Schedule and no additional payment will be made for field testing.

d) Factory Tests.

Factory tests of mechanical and electrical equipment relative to performance, capacity, rating, efficiency, function or special requirements shall be conducted in the factory or shop for each item when this type of test is specified. These tests shall be performed in accordance with applicable standards and test codes.

Factory tests shall be set up and accomplished by the equipment manufacturer who shall provide all shop space, tools, equipment, instruments, personnel and other facilities required for the satisfactory completion of each test.

The cost of factory tests shall be included in the lump sum or unit price of the Contract and no additional payment will be made for factory testing.

12. REFERENCE STANDARDS:

Reference to the standards of any technical society, organization, or association, or to codes of local or state authorities, shall mean the latest standard, code, specification, or tentative

standard adopted and published at the date of taking bids, unless specifically stated otherwise.

13. **PROJECT MANAGEMENT:**

The Contractor shall schedule and coordinate the work of the Contractor and all subcontractors and others involved to maintain the accepted progress schedule. His duties shall also include the planning of the work, the scheduling of ordering and delivery of materials, and checking and control of all work under this Contract. Construction schedules shall be submitted to the Engineer for review prior to the start of any work. Schedules shall be verified or updated at the owner's request on a monthly basis.

The Contractor shall be responsible for complete supervision and control of his subcontractors as though they were his own forces. Notice to the Contractor shall be considered notice to all affected subcontractors.

The Contractor shall appoint a qualified representative to act as the Project Coordinator, or Superintendent, who shall be responsible for coordinating all work and providing liaison with the Engineer and the Owner. The Project Coordinator or Superintendent shall, in addition, plan the work, schedule the ordering and delivery of materials, and check and control the various phases of the construction of all work under this Contract. The Project Coordinator or Superintendent shall, in all matters, represent the Contractor at the sites of the work in the absence of a Corporate Officer or Principal of the firm.

The Project Coordinator or Superintendent shall not be changed without Owner's approval unless the project Coordinator or Superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employ.

14. **SHOP/WORKING AND CONSTRUCTION DRAWING - SUBMITTALS:**

The Contractor shall submit to the Owner/Engineer a complete schedule of data on materials and equipment to be incorporated in the work. Submittals shall be supported by descriptive material, such as catalogs, cuts, diagrams, performance curves and charts published by the manufacturer, to show conformance to specification and drawings requirements; model numbers alone shall not be acceptable.

Each individual submittal item for materials and equipment shall be marked to show Specification Section and paragraph number which pertains to the item.

The purpose of shop drawing submittals is to demonstrate to the Engineer that the Contractor understands the design concept. The Engineer's review of such drawings, schedules, or cuts shall not relieve the Contractor from responsibility for deviation from drawings or Specifications unless he has, in writing, called the Engineer's attention to such deviation at the time of submission, and has received from the Engineer, in writing, permission for such deviations.

Shop drawings shall be stamped by the Engineer with the following classifications:

- 1) No Exceptions Taken.
No corrections, no marks. Contractor shall submit copies for distribution.
- 2) Make Corrections Noted.
A few minor corrections. Items may be ordered as marked up without further resubmission. Submit corrected copies for distribution.
- 3) Amend and Resubmit.
Minor corrections. Item may be ordered at the Contractor's option. Contractor shall resubmit drawings with corrections noted.
- 4) Rejected-Resubmit.
Major corrections or not in accordance with the Contract Documents. No items shall be ordered. Contractor shall correct and resubmit drawings.

Corrections to shop drawings shall not relieve the Contractor from the obligation to complete the project within the time allowed by the Contract Documents.

The Contractor shall submit shop or working drawings of concrete reinforcement, structural details, piping layout, wiring, materials fabricated especially for this project, materials for which drawings are specifically requested, and equipment. The Contractor shall also submit structural shop drawing, computations and construction procedures for jacking pits, sheeted trenches and cofferdams to be used in construction.

Such drawings shall show the principal dimensions, the weight, structural and operating features, space required clearances, etc., depending on the subjects of the drawing. When it is customary so to do, or when the dimensions are of particular importance, the drawings shall be certified by the manufacturer as correct for this project.

No material shall be purchased or fabricated for equipment or other features until the Engineer has reviewed the shop or working drawings. All materials and work involved in the construction shall then be represented by said drawings. No work shall be done upon the foundations or any other part of a structure of which the design or construction is dependent upon the design of equipment or other features for which review is required until such review has been completed.

Six (6) copies (unless otherwise specified) of all shop or working drawings shall be submitted to the Engineer through the Contractor. Only drawings which have been checked and corrected by the material fabricator shall be submitted. The Contractor shall be responsible for the prompt submission of all shop or working drawings so

that there shall be no delay to the work due to the absence of such drawings. Additional prints or drawings shall be furnished as required.

The review of shop and working drawings, etc., will be general and shall not relieve the Contractor from the responsibility for details of design, dimensions, etc., necessary for proper fitting and construction of the work required by the contract.

The Contractor shall furnish prints of all construction drawings in duplicate to the Engineer, who will retain one, set and return the other, having marked thereon such changes as he may suggest. Examination, suggestions and review by the Engineer of drawings or other data submitted to him pursuant to the provisions of this paragraph shall relate only to the apparent fitness of the items thus explained as an aid in producing the general result which is the purposed of the contract. The Engineer's examination, suggestions and review will not be directed, and shall not be understood to relate to the strength, adequacy or sufficiency of such things, which are and will remain solely the responsibility of the Contractor. At the completion of all construction and subsequent modifications, the Contractor shall prepare and deliver to the Engineer six copies of all previously submitted preliminary and shop drawings, each modified to include all subsequent additions and revisions that were made during construction. These said six copies will be identified as AS-BUILT SHOP DRAWINGS.

The Contractor shall furnish the Engineer, during the progress of the work, as many prints of all construction drawings as may be required for construction purposes.

The Contractor shall not order any material until the submitted detail drawings have been reviewed. If the Contractor departs from this procedure for his own convenience, such departure shall be at his own risk and expense, if any. The Contractor shall also give the Engineer notice, stating the quantity of material ordered and the location of the mill and shop where the material will be rolled and fabricated.

15. DIVISION OF WORK:

Division of work as made by the Contract Plans and Specifications is for the purpose of specifying all work which is required. There is no attempt to make complete classification according to trade or any agreements which may exist between Contractors or groups of Contractors and trade union. Such division and classification of the work shall be the Contractor's responsibility.

16. RESTORATION:

The Contractor shall conduct his operations so that restoration of roadways, driveways, curb and gutter, ditches and easements progresses along with the work. If the Owner/Engineer determines that inadequate progress is being made with the restoration, he may shut down the Contractor's operation until the restoration is caught up with the work. No open trenches will be left over night. All trenches will be backfilled before the end of the days operation.

Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees which receive damage to branches shall be trimmed to those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing. Care shall be taken to correctly sever all roots necessary to complete work and consultation with the Town arborist shall be required before any impacts to vegetation is commenced. The Town of Bluffton Tree Ordinance shall be followed at all times.

17. EXISTING UTILITIES:

All known utility facilities are shown schematically on the plans and are not necessarily accurate in location as to plan or elevation. Utilities such as service lines or unknown facilities not shown on the plans will not relieve the Contractor of his responsibility under this requirement except as noted below. "Existing Utility Facilities" means any utility that exists on the project in its original, relocated or newly installed position.

The Contractor shall contact all owners of utilities including, but not limited to, gas companies, electric companies, telephone companies, cable television companies and governmental units prior to starting any excavation on the project and shall request that they locate and mark their respective facilities.

Location and marking of all utilities in accordance with all state and local laws shall be performed.

18. MAINTENANCE DURING CONSTRUCTION:

The Contractor shall maintain the work from the beginning of construction operations until final acceptance of the project. This maintenance shall constitute continuous and effective work prosecuted day by day with adequate equipment and forces to the end that the site and structures thereon are kept in satisfactory condition at all times, including satisfactory signing or marking as appropriate and control of traffic where required by use of traffic control devices as required by the State in which this project is located.

Upon completion of the work, the Contractor shall remove all construction signs and barriers before final acceptance of the Project.

While undergoing improvements, the roads shall be kept open to all traffic by the Contractor. The Contractor shall keep the portion of the Project being used by public traffic, whether it be through or local traffic, in such condition that traffic will be adequately accommodated. The Contractor shall bear all cost of signs and markings as required and other maintenance work during construction and before the Project is accepted and of constructing and maintaining such approaches, crossings, intersections, and other features as may be necessary without direct compensation.

19. FAILURE TO MAINTAIN ROADWAYS AND STRUCTURES:

If, at any time, the Contractor fails to properly maintain roadways and structures, and the Owner/Engineer observes such activity, the Owner/Engineer will immediately notify the Contractor of such non-compliance. If the Contractor fails to remedy the unsatisfactory maintenance within 24 hours after receipt of such notice, the Owner/Engineer may immediately arrange for maintenance of the work, and the entire cost of this maintenance will be deducted from monies due or to become due the Contractor under the Contract. As an alternative to the Owner's/Engineer's maintaining the work, all the items and quantities of work done, but not properly maintained, may be deducted from the current progress estimate, even if such items have been paid for in a previous estimate.

20. FLAGGING TRAFFIC:

Competent, courteous, and neat flagmen shall be provided and available at all times when required. A sufficient number of flagmen shall be provided to stop traffic, advise the public of delays occasioned, and keep traffic in their respective lanes along the project. The Contractor shall conform to all guidelines set forth by the current SCDOT, Manual on Uniform Traffic Control Devices, and traffic control plan provided by the Contractor and approved by the Owner.

21. BARRICADES, DANGER, WARNING & DETOUR SIGNS:

The Contractor shall provide, erect, and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other traffic control devices, and shall take all necessary precautions for the protection of the work and safety of the public. Highways and streets closed to traffic shall be protected by effective barricades, and obstructions shall be lighted during hours of darkness. Suitable warning signs shall be provided to properly control and direct traffic.

The Contractor shall furnish, install, and maintain all necessary barricades, warning signs, and other protective devices in accordance with the State requirements in which the project is located. Temporary signs may be reused, provided they are in good condition and legible. All protective devices shall be kept in a good, legible condition while in use.

As soon as construction advances to the extent that temporary barricades, and signs are no longer needed to inform the traveling public, such signs shall be promptly removed.

The cost of furnishing, erecting, maintaining, and removing protective devices will not be paid for as a separate Bid Item. Where the Contractor is required to perform any of these functions, the cost thereof shall be included in the overall Bid submitted. Ownership of the temporary warning devices shall remain with the Contractor provided the devices are removed promptly after completion of the work as specified above. If such warning devices are left in place for more than 30 days after the specified time for removal, the Owner shall have the right to remove such devices and to claim possession thereof.

Reflectorization for Construction Signing shall conform to the requirements of the State Department of Transportation Standard Specifications.

22. HIGH VOLTAGE ACT:

The Contractor acknowledges the requirement of the High Voltage Power Line Safety Act of the General Assembly of South Carolina by execution of this Contract.

23. REFERENCED SPECIFICATIONS:

Reference to the Department of Transportation Standard Specifications is to current South Carolina Department of Transportation Standard Specifications.

24. DRAWINGS:

The work shall conform to the following drawings, all of which form a part of these specifications and are available in the office of Hussey, Gay, Bell & DeYoung, Inc., Consulting Engineers:

<u>SHEET NO.</u>	<u>TITLE</u>	<u>DATE (Latest Revision)</u>
1	Cover Sheet, Vicinity Map and Schedule of Drawings	January, 2016
2	Construction Notes, and Legend	January, 2016
3	Erosion and Sedimentation and Pollution Control Plan	January, 2016
4	Layout Plan	January, 2016
5	Grading Plan	January, 2016
6	Construction Details	January, 2016

25. PERMITS:

The Owner has obtained DHEC Stormwater Pollution Prevention Plan approval and BJWSA (DHEC) permit (if applicable) to construct for the project which is hereby incorporated into this contract, unless otherwise specified here within. The contractor shall comply with all terms, conditions and requirements of the permits.

26. RECORD DATA:

Complete "record data" information shall be submitted by the Contractor to the Engineer along with the final pay request or sooner. "Record data" information shall include elevations of tops and inverts of all sanitary sewer structures and length, material and size of all pipes, location (and state plane coordinates) of all structures, fittings, valves, hydrants and service laterals. Final payment shall not be approved prior to the Engineer receiving the required "record data" information from the Contractor. "Record data" information shall meet the requirements of all applicable authorities.

27. INSURANCE:

Add the following new paragraph to the General Conditions immediately after paragraph 5.04B:

A. The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Worker's Compensation, and related coverage under paragraphs 5.04.A.1 and A.2 of the General Conditions.

- | | | |
|----|--|-----------|
| a. | State: | Statutory |
| b. | Applicable Federal (e.g., Longshoreman's): | Statutory |
| c. | Employer's Liability | Statutory |

2. Contractor's General Liability under paragraphs 5.04.A.3 through A.6 of the General Conditions which shall include completed operations and product liability coverage and eliminate the exclusion with respect to property under the care, custody and control of the Contractor:

- | | | |
|----|--|-------------|
| a. | General Aggregate | \$1,000,000 |
| b. | Products - Completed Operations Aggregate | \$1,000,000 |
| c. | Personal and Advertising Injury | \$1,000,000 |
| d. | Each Occurrence (Bodily Injury and Property Damage) | \$1,000,000 |
| e. | Property Damage liability insurance will provide Explosion, Collapse, and Underground Coverage where applicable. | \$1,000,000 |
| f. | Excess or Umbrella Liability | |
| | 1) General Aggregate | \$2,000,000 |
| | 2) Each Occurrence | \$2,000,000 |

3. Automobile Liability under paragraph 5.04A.6 of the General Conditions:

- | | | |
|----|--------------------------------|-----------|
| a. | Bodily Injury | |
| | Each person | \$500,000 |
| | Each accident | \$500,000 |
| b. | Property Damage: Each Accident | \$500,000 |
| c. | Combined Single Limit of | \$500,000 |

4. The Contractual Liability coverage required by paragraph 5.04.B.4 of the General Conditions shall provide coverage for not less than the following amounts:

- | | | |
|----|------------------|-------------|
| a. | Bodily Injury | |
| | Each Accident | \$1,000,000 |
| | Annual Aggregate | \$1,000,000 |

7b. Property Damage:	
Each Accident	Included above
Annual Aggregate	Included above

28. INSTRUCTIONS FOR MINIMIZING TREE DAMAGE DURING CONSTRUCTION AND PLANTING OF NEW TREES:

The contractor shall adhere to all requirements mentioned herein as well as to the Town of Bluffton Unified Development Ordinance (incorporated by reference herein, www.townofbluffton.sc.gov/Documents/article5designstandards.pdf). If there is any conflict between this section and the Unified Development Ordinance, Article 5 of the Unified Development Ordinance shall govern.

- A. When installing any utility line, irrigation line, etc. an air spade or boring must be used within the drip-line of any tree over 6 inches DBH, to avoid cutting roots.
- B. Where pervious paving is to be placed under the drip-line of any tree over 6 inches DBH, the soil shall be compacted to a percentage acceptable for pedestrian traffic only. *No roots over 2 inch caliper shall be cut to install paving.* Sub-base layer for pervious paving shall be placed around preserved tree roots.
- C. Where the cutting of tree roots less than 2 inch caliper cannot be avoided, the roots shall be cut flush by hand with a sharp blade or saw and immediately covered with a layer of moist soil or moist material such as burlap.
- D. Grading machinery shall not be used within the drip-line of any tree over 6 inches DBH. If at all possible, grading within the drip-line shall be completed with hand tools only. No heavy equipment shall be used, parked or stored within the dripline of any tree unless absolutely necessary.
- E. Where there is a slope easement that will affect any tree on private or public property, a permanent tree well shall be constructed to avoid placing any fill within the drip-line of any tree. No fill shall be stored within the dripline of any tree.
- F. Trees to be planted shall not be planted so that the top of root-ball (root flare) is below top of surrounding grade nor planted more than 2 inches above grade.
- G. No mulch shall be placed within 6 inches of trunk of a newly planted tree and mulch shall not be over three (3) inches deep.
- H. Trees planted within sidewalk must have root barriers placed around them to deter future sidewalk damage. Trees outside sidewalk must have root barriers placed at the

edge of sidewalk to deter future sidewalk damage. Where pervious paving is to be used, steel paving edging, with spikes for support, can be used to support paving as well as act as a root barrier. This steel edging must be placed so that it does not sever the roots of existing trees.

- I. All containers, burlap, twine, straps, etc. shall be removed from root ball of trees at the immediate time and at the exact location where trees are to be planted. Tree roots of trees to be planted shall not be uncovered until at the time of planting and shall not be moved from one location to another with roots exposed.
 - J. Planting holes shall be dug to a size roughly three (3) times the size of the root ball. Dig no deeper or slightly less deep than the height of the root ball. Do not cultivate the bottom of the hole, as it may cause settling of the root ball and the tree will be planted too deep. Use soil removed from hole to fill in around root ball. Tamp soil lightly, but do not compact soil. Newly planted trees shall be watered immediately after planting.
 - K. All trees / landscaping planted on site must meet or exceed the American Standard for Nursery Stock (ANSI Z60.1) standards. All trees / landscaping planted on site must also meet the requirements of the Bluffton DSO Section 4.14 and Section 14.15.
 - L. Erosion control that must be placed within the dripline or within 1.0 feet per inch of tree DBH, must be placed on natural grade. Erosion control cannot be trenched through the roots of existing trees. Erosion control shall be placed to prevent fill material from covering the roots of trees on site to the most extent possible. Any fill entering within the erosion control near a tree shall be immediately removed with hand tools only and that fill placed outside the dripline of the tree.
29. FRESHWATER WETLANDS:
Freshwater wetlands are evident near the project site, and a Preliminary Jurisdictional Determination letter has been obtained indicating the extents of same. No work shall occur in any federally defined freshwater wetland by the selected contractor or any sub-contractor. To ensure the preservation of any federally defined freshwater wetlands, the contractor shall clearly stake/flag/demarcate any wetlands that are shown on the Plan.

SECTION 01150
MEASUREMENT AND PAYMENT

1. SCOPE:
Under this heading shall be included the methods of measurement and payment for items of work under this Contract.

2. ESTIMATED QUANTITIES:
All estimated quantities for unit price items, stipulated in the Bid Proposal, or other Contract Documents, are approximate and are to be used as a basis for estimating the probable cost of the work and for comparing the bids submitted for the Project. The actual amounts of work done and materials furnished under price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and material furnished. The Contractor agrees to make no claim for damages, anticipated profits or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts included in the Bid Proposal. The Contractor will not be paid for any work which exceeds quantity set forth in the Bid Schedule without a change order issued before the work is performed unless specifically ordered in writing by the Owner/Engineer. The Contractor will provide assistance to the Engineer to check quantities and elevations when so requested.

3. SITE CLEARING AND GRUBBING:
Areas to be cleared are within the limits of clearing as shown on the Plans. Payment is for furnishing all labor, material and equipment to complete the clearing and grubbing, including the removal of all residue from the site.

4. GRADING AND PROJECT MISCELLANEOUS:
Grading shall include all project excavation, compaction, proof rolling, and finish grading, on and off site borrow and earth fill to meet finish grades, NPDES sampling and monitoring, all removals not specifically listed in the Bid Schedule, project staking, bonds and insurance, and all miscellaneous items not included elsewhere in this Bid Schedule to complete this project in accordance with the Contract Plans and Specifications. Payment shall be lump sum to cover all labor, materials and equipment to perform the work. Contractor will perform his own construction staking from baseline staking provided by the Owner.

5. SILT FENCE, TREE PROTECTION, DITCH CHECKS, & CHECK DAMS:
Payment for these items is for measures to be taken as indicated on the Plans and Specifications. Payment is for all labor, material and equipment necessary to meet the requirements, including maintenance and removal, and shall be at the respective unit prices in the Bid Schedule for each type and placement condition.

6. GRASSING:

Measurement of grassing shall be on the basis of the number of square yards furnished and installed where shown on the plans and/or as directed by the Engineer. Payment for furnishing and installing the grassing shall be at the unit price in the Bid Proposal and will include furnishing and applying mulch, fertilizer, water, and onsite or offsite topsoil as needed, and maintenance until a satisfactory stand of grass is achieved.

7. SIDEWALK (CONCRETE):

Measurement of the sidewalks will be on the basis of the number of square yards installed as shown on the plans. Payment is for furnishing all materials, labor and equipment necessary to form, place and compact sidewalks as shown on the Plans, including subgrade preparation.

SECTION 02100
CLEARING AND GRUBBING

1. SCOPE:
Under this heading shall be included the furnishing of all labor, materials and equipment and performing of all operations necessary for clearing and grubbing all areas and disposal of all unsuitable material.
2. LIMITS:
Clearing and grubbing under this Contract shall be performed within the area necessary to perform the work as shown on the plans.
3. CLEARING:
Completely clear, remove and satisfactorily dispose of all unsuitable materials resting on or protruding above the surface of existing ground. Clearing includes trees (unless designated for preservation), stumps, bushes, grass, rubbish, refuse, scrap iron, rubble, other items specified on the Plans to be removed, and all other deleterious materials. Excavate for stumps if necessary.
4. GRUBBING:
Completely grub the entire designated area free of all roots, stumps, logs, rubbish and other deleterious materials to a depth of at least two feet below existing ground. If no further excavation is to be made within the limits of Work under this heading then the holes caused by the removal of stumps, trees and rocks shall be filled and compacted with suitable material and graded to conform with surrounding surface.
5. BENCHMARKS:
The Contractor shall maintain and protect all benchmarks, monuments and other reference points. Any reference point damaged or destroyed as a result of the Contractor's operations or negligence shall be repaired or replaced at no cost to the Owner.
6. DISPOSAL:
Disposal of all cleared and grubbed materials shall be made off the site and property of the Owner unless shown otherwise on the Plans.

SECTION 02200
EXCAVATION, FILLING AND GRADING

1. SCOPE:

Under this heading shall be included the following:

- a) Excavation required for structures.
- b) Sub-cut excavation as required or designated.
- c) Excavation as required for roadways.
- d) Shoring, sheeting and bracing as required.
- e) Wasting and disposal of excess or unsuitable materials.
- f) Furnishing and placing borrow material.
- g) Furnishing and placing granular foundation material.
- h) Compaction of all materials.
- i) Dewatering or unwatering as necessary to complete the excavations to the required depths and as necessary to maintain the excavation sufficiently dry so that all work can be accomplished.
- j) Site grading as required, including excavation and backfill.
- k) Preparation of subgrades.
- l) All other work specified herein.

Excavation and backfill for outside utility systems and other underground piping is specified in Section 02221 of these Specifications.

2. GENERAL:

The Contractor shall accept the site in its existing condition, and shall assume the risk of encountering whatever materials as may occur. Refer also to the paragraph on Differing Subsurface or Physical Conditions, in the General Conditions.

3. SOILS:

The Contractor shall make his own determination of the soil structure and site conditions as they may affect the work.

4. DEWATERING AND PROTECTION AGAINST WATER:

The Contractor shall remove water from the site and shall lower the ground water level as necessary to complete the excavations to the required depths and as required to maintain the excavations sufficiently dry so that all required work can be accomplished. The Contractor shall do such well construction, well pointing, sheeting, ditching, diking and pumping and shall construct necessary drains, channels, sumps and cofferdams to keep his excavations and new structures clear of ground water, storm water or sewage and to keep his construction areas dry during the progress of the work and until the finished work is accepted by the Owner, except as otherwise specified.

The Contractor shall be responsible for the effect of dewatering operations on adjacent property and for the effect on water supplies located in the vicinity of the project.

Adequate measures and protection shall be provided by the Contractor to protect his work from damage from uplift due to ground water, storm water, or flood water. Any damages which may result shall be the Contractor's responsibility.

The Contractor shall accept all responsibility for damage to the work of this Contract because of floods and water pressures and other water damages and shall accept all risks of floods and other events which may occur.

All water discharged by pumping operations shall be discharged so as not to interfere with work under this Contract or with existing structures and operations. Route of dewatering pipe shall be subject to the Engineer's review. Discharge facilities and water quality shall comply with applicable regulations of State and Federal agencies.

Dewatering operations shall be uninterrupted and continuous during the course of the work so as not to endanger any construction in place or to present a hazard to workmen in and around the site. The Contractor shall take all measures necessary including, but not limited to, standby equipment and constant attendance to ensure that the dewatering system remains operational and effective throughout the period of time that it is required.

5. MATERIALS:

a) Earth Fill.

Earth fill, including pavement subgrades, shall consist of all suitable materials from required excavations. Suitable materials for earth fill shall generally be composed of sands, clay-sand mixtures and silt-sand mixtures. Clay-sand and silt-sand mixtures shall be approved by the soil technician prior to being incorporated in fills. Clays, silts, and organic soils will be considered as unsuitable materials.

b) Excavated Materials.

All suitable materials from excavations shall be used in the permanent construction required under these Specifications. Suitable materials shall be excavated separately from materials to be wasted and the suitable materials shall be segregated by loads during the excavation operations and shall be placed in temporary stockpiles and later placed in the designated locations. Excavated materials, which, after drainage, are suitable for the embankment but which, when excavated are too wet for immediate compaction in the embankment, shall be placed temporarily in stockpiles until the moisture content is reduced sufficiently to permit them to be placed in the earth fills.

c) Excess Materials.

All excess material from required excavations shall be removed from the site unless written authorization is given by the Engineer to stockpile the material on the site.

6. EXCAVATION:

Excavation shall include the loosening, loading, removing, transporting, stockpiling and disposing of all materials, wet or dry, necessary to be removed to construct all pavement included in this Contract to the lines and grades, and at the locations, shown on the Contract Drawings. Excavation for outside piping, storm sewers and utilities systems is included in other Sections of these Specifications.

Excavation for structures shall conform to the depth and dimensions necessary for the proper installation of all pavement detailed on the Contract Drawings. Unless shown on the Drawings excavation shall not be carried below the elevations shown on the Drawings. Where bottoms of excavations are slightly unstable and the Drawings do not require a stabilized granular backfill and the Engineer does not direct additional excavation and replacement, the Contractor may provide a gravel course, but such work will be considered as for the Contractor's convenience and will not be considered as extra work.

Where any unauthorized excavation is made below the elevation indicated on the Contract Drawings, the excavation shall be restored to the proper elevation with compacted, well graded granular backfill. Such backfill shall be compacted as specified in the Article entitled "Compaction".

Excavation for pipes under and adjacent to structures shall be made after the installation of the granular backfill. Excavations shall be made to the required depths, grades, alignment, and trench widths required for the installation of the pipe. Temporary sheeting and bracing shall be used as required to confine the trench size and width. Trench size and width shall conform to the requirements in Section 02221.

Excavation shall be made for roadways and other site work to the required depths, grades and alignment.

Excavations, where conditions require, shall be properly shored, sheeted and braced by the Contractor to maintain excavation in a condition to permit the safe and efficient installation of all items of Contract work. Upon completion of the various Contract items, all temporary forms, shores and bracing shall be removed. While being withdrawn, all voids left by the sheeting and bracing shall be carefully filled with sand and compacted.

7. TOPSOIL CONSERVATION:

Over areas requiring excavation and/or fill, there may be limited amounts of existing topsoil, suitable for future use. The Contractor shall strip all such topsoil and shall stockpile it for future use under this Contract. Except for topsoil material available from the excavation, topsoil shall be obtained from off-site borrow. See also the Article in Section 02480 entitled "Topsoiling" for requirements of topsoil to be used as such under this project.

8. UNSUITABLE MATERIAL:

Where material encountered is unsuitable for subgrade construction of roads, buildings and walks, such material shall be excavated to the required depth of compaction (generally two feet below pavement base course), disposed of off the site and property of the Owner and replaced with suitable material. Unsuitable materials are those classified as MH, CH, OH, OL, and Peat in accordance with the Unified Soil Classification System. Excess water in material will not be a basis for establishing unsuitable material regardless of gradation. The Engineer shall be notified immediately upon encountering of unsuitable material.

9. BORROW:

It is anticipated that suitable material for required fill and backfill can be obtained from required excavation. Suitable materials shall be secured by the Contractor from off-site sources if required. Payment for this item will be included in the lump sum price for grading, etc.

10. BACKFILLING:

All excavation shall be backfilled to the lines and grades shown on the Contract Drawings. Backfill adjacent to structures shall not be placed until forms, form lumber and all debris from construction has been entirely removed from around the work. No backfilling shall be done in unsuitable weather or over ground that is frozen or too wet.

Backfill shall not be placed against structures until the concrete has cured at least 7 days. Backfill, in general, shall be placed in horizontal layers not in excess of 12 inches in thickness, except in the cases of embankment construction around structures and under roadway and piping locations, where backfill shall be placed in 6 inch layers, with each layer thoroughly compacted as specified hereinafter, prior to the addition of the succeeding layer.

Fill immediately adjacent to walls shall be hand tamped and special care shall be taken to prevent any wedging action or eccentric loading against the walls.

Fill material shall be suitable material taken from the excavation. All sticks, debris, organic matter, frozen material, stones or cobbles over 6 inches in maximum dimension, and other deleterious material shall be removed from the backfill material prior to its use.

11. FILL

Compacted structural fill for site grading may be constructed using on-site borrow materials free of organics or other deleterious materials. Fill material shall be placed in horizontal lifts of 8 inch to 9 inch loose thickness and compacted, utilizing heavy construction equipment suitable for the soil type being placed, to at least 98% of the maximum dry density as determined by ASTM D-698 (Standard Proctor). All backfill material shall be tested by qualified geotechnical personnel in order to confirm that the recommended degree of compaction is obtained. Excessively wet or excessively dry soils shall not be used as fill materials without proper drying or wetting. A moisture content range of plus or minus 3% of the optimum moisture of the fill material is required. High plasticity soils such as CH or MH or organic soils such as PT, OL, or OH soils are unsuitable as controlled fill. High plasticity SC soils are also unsuitable. Field density tests to determine fill compaction shall be performed for every 2500 square feet of fill area, with a minimum of two tests per lift.

Site preparation, prior to fill placement, shall begin with removal of the existing surficial organic soils as described above. The site shall then be proof rolled in the presence of the geotechnical engineer. Proof rolling shall consist of a minimum of four passes of a fully loaded dump truck or other approved equipment across the soil subgrade in question. Proof rolling shall be performed during a time of good weather and not while the site is wet as a result of recent rain. Areas which pump, rut, weave, or are otherwise determined to be unsuitable by the geotechnical engineer shall be excavated and replaced by compacted structural fill (specified above) or approved granular soil or crushed rock materials. Once the subgrade is stabilized under proof roll, the subgrade shall be tested to verify that the subgrade is compacted to a minimum of 98% of standard proctor (ASTM D 698).

12. COMPACTION:

a) General.

Compaction of earth fill and all pavement subgrades shall be performed to the percentages of maximum standard or modified dry densities and to the depths as shown on the drawing or as follows:

1. Subgrades Under Paved Areas and Structures.

100 Percent Standard (ASTM Test D698) 24 inches

2. Pedestrian Traffic Subgrades.

90 Percent Standard (ASTM Test D698) 12 Inches

3. Unpaved Areas To Be Grassed Or Sodded.

90 Percent Standard (ASTM Test D698) Full Depth

- b) Moisture Content.
All compaction shall be performed at material moisture contents within 3 percentage points, plus or minus of optimum. Compaction and proof rolling equipment shall be as outlined in Section 02500 or as may be required for the type of fill being compacted.

13. TESTING:

- a) General.
The Contractor will select an approved testing laboratory for the purpose of identifying soils, checking densities, and classifying soils materials during construction. Payment for the testing will be by the Contractor as outlined in the Special Conditions.

The Contractor shall include the cost of one compaction test per 200 cubic yards, 500 linear feet of curb, 500 linear feet of subgrade along pavement centerline and 1,500 square yards of base and one "proctor" test for each type of fill material to determine if the proper compaction has been attained.

- b) Moisture Density Tests.
Testing shall be in accordance with ASTM Methods D698 and D1557. A test shall be performed on each type of material used in the work regardless of source. Tests will be accompanied by particle-size analyses of the soils tested (ASTM Methods D421 and D422). Changes in color, gradation, plasticity or source of fill material will require the performance of additional tests. Copies of all test results shall be furnished to the Engineer.

- c) Field Density Tests.
Tests shall be made in accordance with ASTM Method D1556. If any compaction test reveals that fill or backfill is not compacted as specified, the Contractor shall scarify and recompact as required to achieve the specified density. Additional compaction tests shall be made to verify proper compaction. These additional tests, required due to failure of the original test, shall be paid for by the Contractor and not be reimbursed by the Owner.

- d) Submittals.
The soils technicians will submit formal reports of all compaction tests and retests to the Contractor, Owner and Engineer as soon as possible upon completion of the required tests.

This report information is to include but not be limited to the following:

1. Date of the test and date submitted.

2. Location of test.
3. Wet weight, moisture content and dry weight of field sample.
4. Description of soil.
5. Maximum dry density and moisture content of the lab sample which best matches the field sample in color, texture, grain size and maximum dry density.
6. Ratio of field dry density to maximum lab dry density expressed as a percentage.
7. Comments concerning the field density passing or failing the specified compaction.
8. Comments about recompaction if required.

e) Compaction Results.

The soils technician is to advise the Engineer and Contractor immediately of any compaction tests failing to meet the specified minimum requirements. No additional lift is to be placed on a lift with any portion failing.

14. GRADING:

Upon completion of other construction operations, the entire site, within the limits shown on the Drawings, shall be brought to the finished grades shown. All surfaces shall be sloped to the grades indicated and which will provide proper drainage. All surfaces shall be raked smooth and shall be free of all vegetable matter, debris and stones larger than 2-1/2 inches. Allow for thickness of required topsoil.

SECTION 02210
EROSION CONTROL

1. SCOPE:

Under this section shall be included all measures both temporary and permanent to control erosion and sedimentation, and protect all surface waters and property both on and off site. This shall include all labor, materials and equipment necessary to meet the requirements of this Section.

2. GENERAL:

It is the intent of this Specification that the Project and the Contractor comply with all applicable requirements of the Erosion and Sedimentation Act of 1975 and Bryan County regulations.

The Manual for Erosion and Sediment Control in South Carolina further defines practices and requirements. The Contractor is responsible for maintaining all sediment and erosion control measures on the project site during construction. The Contractor is responsible for any damage caused due to failure to implement these requirements. A Soil Erosion and Sedimentation Control Permit have been obtained by the Owner so that periodic inspections may be made by the County. The Contractor is to cooperate with the person performing these inspections.

3. PLANS:

A Soil Erosion and Sedimentation Control Plan is included in the Contract Documents and is to be implemented as a part of the procedures necessary to implement requirements of the Act and local regulations.

4. IMPLEMENTATION:

Implementation of the requirements of the Act is based on the following principles:

- a) The disturbed area and the duration of exposure to erosion elements should be minimized.
- b) Stabilize disturbed areas immediately.
- c) Retain or accumulate runoff.
- d) Retain sediment.
- e) Do not encroach upon watercourses.

5. SYMBOLS:

The Soil Erosion and Sedimentation Control Plan contains standard symbols for the different types of measures for implementing the Act. These symbols are defined for conditions, design criteria and construction specifications in Sections II and III of the Manual.

6. SPECIFIC REQUIREMENTS:

- a) All disturbed areas shall be grassed by sodding or seeding, fertilizing, mulching and watering to obtain a ground cover which prevents soil erosion.
- b) A temporary construction egress pad shall be installed and maintained at any point where construction vehicles enter a paved road, street or parking area. The pad shall be used to prevent mud from leaving the construction area. The pad shall be constructed as shown in the Manual for Erosion and Sediment Control.
- c) All measures installed for sediment control shall be checked at the beginning and end of each day when construction is occurring to ascertain that the measures are in place and functioning properly.
- d) Erosion control measures shall be inspected by the Contractor after each rainfall event and at least daily during prolonged periods of continuous rainfall. Contractor shall make repairs and adjustments as necessary to maintain the effectiveness of all sediment and erosion control measures.

SECTION 02480
GRASSING AND SODDING

1. SCOPE:

This section includes topsoiling, fertilizing, and grassing.

2. GENERAL:

All disturbed areas resulting from work under this Contract shall be grassed. For roads under state jurisdiction, grassing on the right-of-way shall meet the requirements of the Department of Transportation Standard Specifications.

When the amount of grassing exceeds one acre, samples shall be taken and analyzed for pH, calcium, magnesium and Soil Fertility needs. The analyses shall be the basis for determining the composition and application rate of the fertilizer and possible varieties of grass. When these tests are taken the results shall be submitted to the Engineer.

3. TOPSOILING:

Topsoil shall be placed 4 inches to 6 inches deep over all areas to be grassed, using salvaged topsoil to the extent possible and topsoil from offsite borrow to supplement that salvaged. Topsoil shall be natural soil of the region, free from lumps, clay, toxic substance, sticks, debris, vegetation, stones over 1 inch in maximum dimension, and suitable for growing grass. Topsoil shall be spread over the areas to be grassed and shall be fine graded so as to be suitable for sowing.

4. FERTILIZING:

a) Material.

All areas to be grassed shall have fertilizer applied as specified or as determined by the soil analyses.

Fertilizer shall be of such composition that when uniformly applied it will furnish not less than the following quantities of available plant food per 1,000 square feet:

Nitrogen	0.8	pounds
Phosphoric Acid	0.8	pounds
Potash	0.8	pounds

This is equivalent to a commercial 8-8-8 fertilizer. Commercial fertilizer blends which will give fractions exceeding these will be accepted, provided that no fraction exceeds the required by more than 2 times. The fertilizer shall be delivered to the job in original, unopened containers.

5. SEEDING:

Seed shall be delivered in suitable sealed containers labeled in accordance with applicable laws and regulations and including name and location of the producer. The pure live grass seed mixture shall be as shown on the Plans.

a) Application.

Seeds are to be sown by a mechanical spreader either hand operated or machine operated. Seeding equipment shall be such as will continuously mix the seeds to prevent segregation.

b) Soil Preparation.

Immediately before seeding, the soil shall have been properly prepared for seeding. Immediately after the seed has been sown, the entire area shall be raked lightly and rolled lightly to pack the soil firmly around the seed.

Seeded areas shall be moist when seeding and shall be kept moist by sprinkling until a good stand of grass is obtained and until the work is accepted by the Owner. Reseeding shall be done by the Contractor at his own expense as may be necessary to obtain a satisfactory stand of grass.

The Contractor shall use mulch or other additive materials when conditions do not allow an acceptable stand of grass to grow. Mulch and additive materials shall contain no weed seeds.

6. MAINTENANCE AND RESEEDING:

All seeded areas shall be maintained without additional payment until acceptance of the Contract and any regrading, refertilizing, or reseeding shall be done at the Contractor's expense. Any areas which fail to show a "catch" or uniform stand, for any reason whatever, shall be reseeded with the original mixture, and such reseeding shall be repeated until final acceptance. The Contractor shall properly water, mow, and otherwise maintain all seeded areas until final acceptance.

Damage resulting from erosion, gulleys, washouts, or other causes shall be repaired by filling with topsoil, tamping, refertilizing, and reseeding by the Contractor at his expense if such damage occurs prior to acceptance of the Contract.

7. SUBMITTAL:

Manufacturer's data shall be submitted to the Engineer on grass seed and fertilizer before the materials are delivered to the project site.

SECTION 02520
CONCRETE SIDEWALKS, CURB AND GUTTER

1. SCOPE:

Under this heading shall be included the construction of all concrete sidewalks, curb and gutter.

2. CONCRETE:

Concrete shall be composed of cement, admixtures, fine aggregate, coarse aggregate, and water proportioned and mixed to produce a plastic workable mix in accordance with the requirements of American Concrete Institute (ACI) Manual of Concrete Practice-1980 (MCP), and shall be suitable for the specific conditions of placement. Concrete shall have 28-day compressive strength of not less than 3,000 psi (unless specified otherwise in the Bid Proposal), and contain not less than 611 pounds of cement per cubic yard of concrete. The maximum size of coarse, hard aggregate shall be 3/4-inch.

All concrete shall be ready mixed concrete in accordance with ASTM C94. All reinforcement shall comply with ASTM A615.

3. PREPARATION:

Before placing concrete, all debris and water shall be removed from the places to be occupied by the concrete. Wood forms shall be thoroughly wetted or oiled, and the reinforcement cleaned of coatings. Formwork and the placement of reinforcement, pipes, anchors and other inserts shall be inspected by the Engineer before any concrete is deposited.

4. PLACING:

The placing and depositing of all concrete shall be done in accordance with requirements of the ACI. Concrete shall be rapidly handled from mixer to forms and deposited as nearly as possible in its final position to avoid segregation due to rehandling or flowing. Concrete shall not be allowed to drop freely more than 4 feet. For greater drop a tremie or other means must be used. Concrete shall be spaced and worked by hand and vibrated to assure close contact with all surfaces of forms and reinforcement and leveled off at proper grade to receive finish. No concrete that has partially hardened or been contaminated by foreign material shall be deposited in the work. Concrete shall never be deposited upon soft mud or dry porous earth. Concrete shall be placed in accordance with the plans. Natural drainage patterns shall not be altered.

5. VIBRATION:

Concrete shall be placed with the aid of manual vibration. The intensity of vibration shall be sufficient to cause flow or settlement of the concrete into place, but shall not be long enough to cause segregation of the mix. To secure even and dense surfaces, vibration shall be supplemented by hand spading in the corners and angles of forms and along form surfaces

while the concrete is plastic under the vibratory action. Caution must be exercised to prevent any injury to the inside face of the forms or any movement of the reinforcement.

6. CONSTRUCTION JOINTS, CONTROL JOINTS AND EXPANSION JOINTS:

Joints shall be formed and located as indicated on the Plans, or as recommended by applicable requirements of MCP. Final locations are subject to Engineer's review.

The rate and method of placing concrete and the arrangement of construction joint bulkheads shall be such that the concrete between construction joints shall be placed in a continuous operation. Whenever it is necessary to stop work, such stops shall be located and temporary bulkheads erected. Before concreting is resumed, the surfaces of previously placed concrete shall be roughened, cleaned, wetted and slushed with grout immediately before additional concrete is placed. Grout shall be one part Portland Cement and two parts sand.

Expansion joints shall be provided in walks, and curb and gutter where shown and at walls, intersecting walks and buildings. Expansion joints in walks and curb and gutter shall be made with 1/2 inch thick premolded, non-extruding expansion joint filler, "Flexcell," or "Meadows" or equal, extending through the full thickness of the concrete except the upper 1/4 inch at 50 foot intervals. When sidewalk is adjacent to curb the expansion joints shall coincide. These shall be set accurately in place to straight lines and concreted in. Control joints in sidewalks shall be spaced at intervals equal to the width of the sidewalk and in curb and gutter at 10 foot intervals. Edges of grooves, expansion joints and edges of walks and curb and gutter shall be rounded to a 1/4 inch radius with suitable grooving and edging tools.

7. FINISHING:

Walks and curb and gutter shall have a light broomed finish with troweled edges and joints to produce non-slippery finish at right angles to the length unless otherwise directed. Completed work shall be finished true to line and grade and when tested with a 10 foot straightedge shall not show a variation of more than 1/4 inch from a straight line.

8. PROTECTION AND CURING:

Protect concrete against frost, freezing temperatures, rapid drying and heavy rain after placing during this period, concrete shall be maintained above 70 degrees F. for at least 3 days or above 50 degrees F. for at least 5 days.

Walks and other exterior concrete shall be cured by covering first with sprayed-on curing compound applied immediately after finishing and then also completely covered with an impermeable fiber filled paper for a period of not less than 72 hours.

Membrane curing compound shall comply with ASTM C309 for Type I and paper shall comply with ASTM C171.

Exterior concrete work constructed during hot weather shall be protected, in addition to the curing specified above, with Spencer Kellogg Anti-Spalling Compound, or Carter-Waters

"Dek-Seal," or equal, applied as soon as conditions will permit after curing and when the concrete is clean and dry. The mixture shall be applied uniformly in 2 applications, in accordance with the manufacturer's recommendations. The second application shall not be made until after the first coat has been completely absorbed by the concrete.

9. REMOVAL OF FORMS:

Care shall be taken in the removal of the forms not to damage the surface of the concrete. Immediately after the forms are removed, all damaged or imperfect work shall be patched in a neat and workmanlike manner, or if badly damaged or imperfect, the work shall be rebuilt. Leave shoring in place until concrete member will support its own weight safely plus any loads that may be placed upon it.

Freshly stripped surfaces shall not be pointed up or touched in any manner before having been inspected by the Engineer.

10. PATCHING AND FINISHING CONCRETE FORMED SURFACES:

Immediately after removing forms, all concrete surfaces shall be inspected, and any honeycomb, voids, stone pockets, and tie holes shall be patched before the concrete is thoroughly dry. Defective areas shall be chipped away to a depth of not less than 1 inch with the edges perpendicular to the surface. The area to be patched and a space of at least 6 inches wide entirely surrounding it shall be wetted to prevent absorption of water from the patching mortar. The patch shall be finished in such a manner as to match the adjoining surface.

Immediately upon removing forms from finished concrete surfaces, they shall be cleaned of all cement fins and any air pockets shall be carefully filled with cement mortar worked in to insure a bond with the concrete and finished off to match the surrounding surface.

All vertical exterior surfaces exposed in the finished work shall be finished to a smooth rubbed finish having a uniform appearance.

This section shall only apply to the formed surfaces of concrete. Any exposed surface of concrete shall be finished without imperfection. If concrete sections are deficient, the entire section of concrete shall be removed, from joint to joint, and replaced satisfactorily.

11. PAVERS

At a minimum, pavers shall be installed with sand joints and a 1" sand (leveling) bed. The subgrade for pavers shall be compacted to 95% standard proctor (ASTM D-698). Refer to the manufacturer's recommendations for further direction on installation of the paver sections.