

# CONTRACT DOCUMENTS AND SPECIFICATIONS

for

TO #09 Work Plan (2022) Corrective Repairs  
June 2023  
WKD #20230009.00.GV

Prepared for

Oconee Joint Regional Sewer Authority  
623 Return Church Road  
Seneca, SC 29678



Plans & Specifications  
Prepared by  
W.K. Dickson & Co., Inc.  
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Oconee Joint Regional Sewer Authority  
TO #09 Work Plan (2022) Corrective Repairs

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DOCUMENT 00 11 16  
INVITATION TO BID

Sealed bids will be received by Oconee Joint Regional Sewer Authority, on July 21, 2023, until 2:00, PM Local Time for construction of Work Plan (2022) Corrective Repairs, at which time they will be publicly opened and read aloud at OJRSA Treatment Plant, 623 Return Church Road, Seneca SC 29678.

Bids must be submitted on the complete project and must be enclosed in a sealed envelope, addressed to Oconee Joint Regional Sewer Authority, 623 Return Church Road, Seneca SC 29678. Outside of the envelope must be marked "Bid for Work Plan (2022) Corrective Repairs." Envelope must also bear on the outside, the name of the bidder, bidder's address, and bidder's license number. All bids must be made on blank forms provided and included in the bound document or as provided by Addendum prior to bid.

The work will consist of rehabilitation of the existing RCP and VCP gravity sewer trunk line in on the Oconee Joint Regional Sewer Authority's (OJRSA) system. Repairs include replacing approximately 335 LF of 15" VCP sewer trunkline and connecting to the existing manholes, six (6) point repairs of 10" sewer trunkline located at various locations in the system and lengths requiring repair varying between 10 LF to 60 LF, and one (1) point repair of approximately 60 LF of 30" sewer trunkline. OJRSA easements and locations of repairs are generally located in and near creeks with potential creek crossings. Contractor will be responsible for coordination with SCDOT and SCDHEC to acquire necessary permits and permissions to complete the work.

Each proposal shall be accompanied by a cash deposit or certified check, drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation, in an amount equal to not less than five percent of the proposal. In lieu thereof, the bidder may offer a bid bond of five percent of the bid prepared on the Bid Bond form contained within the Contract Documents or a Surety Company's Standard Bid Bond form, duly executed by the Bidder as principal and executed by a surety company licensed under the laws of South Carolina to execute such bonds and listed in the latest issue of U. S. Treasury Circular 570, conditioned that the surety will, upon demand, forthwith make payment to the obligee upon said bond if the bidder fails to execute the contract in accordance with the bid bond. Said deposit shall be retained by the Owner as liquidated damages in event of failure of the successful bidder to execute the contract within ten days after the award or to give satisfactory surety as required by law.

Plans, Specifications, and Contract Documents are available for purchase by going to Plan Room at [www.wkdickson.com](http://www.wkdickson.com). **Please note that only registered plan holders may bid as a General Contractor.**

No bid may be withdrawn after the scheduled closing time for the receipt of bids for a period of 90 days.

Bidders must comply with the President's Executive Order No. 11246, as amended, which prohibits discrimination in employment regarding race, creed, color, sex, or national origin.

The Contractor shall comply with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL91-54), or latest revisions.

All Equipment/Manufacturer “Or-Equal” Qualification Packages, per the Instructions to Bidders (Document 00 21 13), must be submitted at least ten days prior to the advertised bid date.

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

DOCUMENT 00 21 13  
INSTRUCTIONS TO BIDDERS

1.0 DEFINED TERMS

- A. Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract have the meanings assigned to them in the General Conditions. Certain additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.
1. Bidder: One who obtains a complete set of Bidding Documents from the Engineer and submits a bid directly to Owner as distinct from a sub-bidder who submits a bid to a bidder.
  2. Issuing Office: The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered. The Issuing Office for this project is W.K. Dickson & Co., Inc., 5 Legacy Park Road, Suite A, Greenville SC 29607.
  3. Successful Bidder: The lowest, responsible, and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award taking into consideration all alternates, availability of funds and is best interest of Owner.
  4. Registered Plan Holder – The individual or entity who registers and purchases Contract Documents from W.K. Dickson & Co., Inc. Plan Room at [www.wkdickson.com](http://www.wkdickson.com).
  5. Contract Documents – Are defined in the Agreement Form (Document 00 52 15) and Standard General Conditions (Document 00 72 15).

2.0 BIDDING DOCUMENTS

- A. Contract Documents are available for purchase by going to Plan Room at [www.wkdickson.com](http://www.wkdickson.com). **Please note that only registered plan holders may bid as a General Contractor.**
- B. Complete sets of the Bidding Documents in the number and for the cost, if any, stated in the Invitation to Bid may be obtained from the Issuing Office.
- C. Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assume any responsibility for errors, omissions, or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- D. Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the work and do not confer a license or grant for any other use.

### 3.0 QUALIFICATIONS OF BIDDERS

- A. To demonstrate qualifications to perform the work, each Bidder must be prepared to submit within five days after Bid opening upon Owner's request, written evidence such as financial data, previous experience, present commitments, and other such data. The Owner reserves the right to reject any Bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the work contemplated therein. Each Bid must contain evidence of Bidder's qualification to do business in the state where the Project is located.

### 4.0 EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- A. It is the responsibility of each Bidder before submitting a Bid to:
  - 1. Examine thoroughly the Contract Documents and other related data identified in the Bidding Documents (including "technical data" referred to below);
  - 2. Visit the site to become familiar with and satisfy Bidder as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the work;
  - 3. Consider federal, state, and local laws and regulations that may affect cost, progress, performance or furnishing of the work;
  - 4. Study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data; and
  - 5. Promptly notify Owner of all conflicts, errors, ambiguities, or discrepancies which Bidder has discovered in or between the Contract Documents and such other related documents.
- B. Reference is made to the Available Project Information (Document 00 31 00) for identification of:
  - 1. Those reports of explorations and tests of subsurface conditions at or contiguous to the site which have been utilized by Engineer in preparation of the Contract Documents. Bidder may rely upon the general accuracy of the "technical data" contained in such reports but not upon other data, interpretations, opinions, or information contained in such reports or otherwise relating to the subsurface conditions at the site, or upon the completeness thereof for the purposes of bidding or construction.
  - 2. Those drawings of physical conditions in or relating to existing surface and subsurface structures (except underground facilities) which are at or contiguous to the site that have been utilized by Engineer in preparation of the Contract Documents. Bidder may rely upon the general accuracy of the "technical data" contained in such drawings but not upon other data, interpretations, opinions, or information shown or indicated in such drawings or otherwise relating to such

structures, or upon the completeness thereof for the purposes of bidding or construction.

- C. Information and data shown or indicated in the Contract Documents with respect to existing underground facilities at or contiguous to the site is based upon information and data furnished to Owner and Engineer by owners of such underground facilities or others, and Owner and Engineer do not assume responsibility for the accuracy or completeness thereof unless it is expressly provided otherwise in the Supplementary Conditions.
- D. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and underground facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in Paragraphs 4.2 and 4.3 of the General Conditions.
- E. Before submitting a Bid each Bidder will be responsible to obtain such additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface and underground facilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance or furnishing of the work or which relate to any aspect of the means, methods, techniques, sequences, or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or which Bidder deems necessary to determine its Bid for performing and furnishing the work in accordance with the time, price, and other terms and conditions of the Contract Documents.
- F. On request, Owner will provide each Bidder access to the site to conduct such examinations, investigations, explorations, tests, and studies as each Bidder deems necessary for submission of a Bid. Bidder must fill all holes and clean up and restore the site to its former conditions upon completion of such explorations, investigations, tests, and studies.
- G. Reference is made to the Supplementary Conditions for the identification of the general nature of work that is to be performed at the site by Owner or others (such as utilities and other prime contractors) that relates to the work for which a Bid is to be submitted. On request, Owner will provide to each Bidder for examination access to or copies of Contract Documents (other than portions thereof related to price) for such work.
- H. The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the work required by the Contract Documents and applying the specific means, methods, techniques, sequences, or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents, that Bidder has given Owner written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Contract Documents and the written resolutions thereof by Owner is acceptable to Bidder, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the work.
- I. The provisions of Paragraphs 4.A through 4.H, inclusive, do not apply to asbestos, polychlorinated biphenyls (PCBs), petroleum, hazardous waste, or radioactive material covered by Section 4.6 of the General Conditions.



## 5.0 AVAILABILITY OF LANDS FOR WORK, ETC.

- A. The lands upon which the work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Bidder in performing the work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment or storage of materials and equipment to be incorporated in the work are to be obtained and paid for by Bidder. The Bidder shall furnish copies of agreements and releases to the Owner. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.

## 6.0 INTERPRETATIONS AND ADDENDA

- A. All questions about the meaning or intent of the bidding documents are to be directed to Owner. Interpretations or clarifications considered necessary by Owner in response to such questions will be issued by Addenda delivered electronically to all parties recorded by Owner as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- B. Addenda may also be issued to modify the bidding documents as deemed advisable by Owner.

## 7.0 BID SECURITY

- A. Each Bid must be accompanied by bid security made payable to Owner in an amount of five percent of Bidder's maximum bid price and in the form of a certified or bank check or a Bid Bond issued by a surety meeting the requirements of Paragraph 5.1 of the General Conditions.
- B. The bid security of successful bidder will be retained until such Bidder has executed the Agreement, furnished the required contract security, and met the other conditions of the Notice of Award, whereupon the bid security will be returned. If the successful bidder fails to execute and deliver the Agreement and furnish the required contract security within 10 days after the Notice of Award, Owner may annul the Notice of Award, and the bid security of that Bidder will be forfeited. The bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the 10th day after the effective date of the Agreement or 90 days after the bid opening, whereupon bid security furnished by such Bidders will be returned. Bid security with bids which are not competitive will be returned within 10 days after the bid opening.

## 8.0 CONTRACT TIMES

- A. The number of calendar days within which, or the dates by which, the work is to be completed and ready for final payment are set forth in the Agreement.

## 9.0 LIQUIDATED DAMAGES

- A. Provisions for liquidated damages, if any, are set forth in the Agreement Form (Document 00 52 15) and as defined in the General Conditions.

## 10.0 "OR-EQUAL" ITEMS

- A. Bidder's attention is directed to Article 6.5 of the General Conditions concerning substitutes and "or-equal" items. Where an item or material is specified by a proprietary name, it is done for the purpose of establishing a basis of quality and not for the purpose of limiting competition. The Engineer's intent is to consider alternative products which have the desired essential characteristics. The Engineer will consider any such products offered, pursuant to 19-445.2140, Specifications, of the South Carolina Procurement Code.
- B. Equipment Suppliers desiring to submit alternative product proposals for prior acceptance of the Engineers shall submit, in writing, such proposals a minimum of 10 days prior to the deadline for receiving bids. Applications received after this time will not be reviewed. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute, including drawings, cuts, performance and test data, and other information necessary for an evaluation. Submittal shall include a list of deviations to the specifications. A statement setting forth any changes in other materials, equipment, or other work that incorporation of the substitute would require shall be included. The Engineer shall consider and either accept or reject all alternative product proposals submitted.
- C. Equipment described by performance characteristics only (no named equipment listed) will not be reviewed prior to bidding.
- D. The Qualification Package submittal requirements for each equipment section shall be as follows:
  - 1. A complete set of drawings, specifications, catalog cut-sheets, and detailed descriptive material of proposed "or equal" equipment items or products. This information shall identify all technical and performance requirements stipulated on each drawing and in each specification section.
  - 2. Detailed information shall be submitted for all buy-out items such as hardware, motors, bearings, reducers, belts, sheaves, motor controllers, and instrumentation (field device, major panel device and anticipated control panel layout).
  - 3. List showing materials of construction of all components, including all buy-out items.
  - 4. Manufacturer's recommended spare parts, including all buy-out items.
  - 5. Information on equipment field erection requirements including total weight of assembled components and weight of each sub-assembly.
  - 6. A maintenance schedule showing the required maintenance, frequency of maintenance, lubricants, and other items required at each regular preventative maintenance period, including all buy-out items.
  - 7. Process equipment electrical requirements and schematic diagrams.
  - 8. Detailed written documentation with discussion of all deviations of equipment, including all buy-out items, from the Contract Documents.

- E. Requests for review of proposed “or equal” equipment items(s) or product(s) of material or equipment will not be accepted by Engineer from anyone other than equipment manufacturer or supplier. If equipment manufacturer or supplier wishes to furnish or use an “or equal” equipment items(s) or product(s) of material or equipment shall first make a written application to Engineer for acceptance thereof certifying that the proposed “or equal” equipment item(s) or product(s) of material or equipment will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified.
- F. If the equipment manufacturer or supplier fails to furnish all of the preceding information which has been deemed necessary by the Engineer to evaluate a proposed “or equal” equipment item or product for equivalency with the equipment items or products, the proposed “or equal” qualification package will be rejected by the Engineer. If the “or equal” qualification package is rejected by the Engineer, the Bidder shall furnish one of the named equipment items or products without change to the contract price.
- G. No proposed “or equal” equipment items or products shall be considered unless, in the opinion of the Engineer, it conforms to the Contract Documents in all respects, except for make and manufacturer and minor details.
- H. The Engineer shall be the sole authority for determining conformance of a proposed “or equal” equipment item or product with the Contract Documents. Under no circumstances shall the Engineer be required to prove that “or equal” equipment items or products are not equal to the named equipment items or products.
- I. Contractors shall include all costs associated with any redesign required with their bid.
- J. Manufacturers qualifying will be recognized by addendum.

#### 11.0 SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- A. If the Supplementary Conditions require the identity of certain subcontractors, suppliers, and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to Owner in advance of a specified date prior to the effective date of the Agreement, apparent successful bidder, and any other Bidder so requested, shall within 10 days after Bid opening submit to Owner a list of all such subcontractors, suppliers and other persons and organizations proposed for those portions of the work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such subcontractor, supplier, person or organization if requested by Owner. An Owner or Engineer who after due investigation has reasonable objection to any proposed Subcontractor, supplier, other person or organization, may before the effective date of the Agreement request apparent successful bidder to submit an acceptable substitute without an increase in bid price.

If apparent successful bidder declines to make any such substitution, Owner may award the contract to the next lowest Bidder that proposes to use acceptable subcontractors, suppliers and other persons and organizations. The declining to make requested substitutions will not constitute grounds for sacrificing the bid security of any Bidder. Any subcontractor, supplier, other person

or organization listed and to whom Owner or Engineer does not make written objection prior to the effective date of the Agreement will be deemed acceptable to Owner and Engineer.

- B. If the Bid Form requires the Bidder to complete a Tabulation of Major Equipment Items and Products, the Bidder will follow the requirements contained on the Bid Form.
- C. In contracts where the Contract Price is on the basis of cost of the work plus a fee, apparent successful bidder, prior to the Notice of Award, shall identify in writing to Owner those portions of the work that such Bidder proposes to subcontract and after the Notice of Award may only subcontract other portions of the work with Owner's written consent.
- D. No Bidder shall be required to employ any subcontractor, supplier, other person or organization against whom Bidder has reasonable objection.

## 12.0 BID FORM

- A. The Bid Form is included with the Bidding Documents; additional copies may be obtained from Engineer (or the Issuing Office).
- B. All blanks on the Bid Form must be completed by printing in ink or by typewriter.
- C. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign), and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown as indicated on the Bid Form.
- D. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature, and the official address of the partnership must be shown as indicated on the Bid Form.
- E. The Bid shall contain an acknowledgment of receipt of all addenda (the numbers of which must be filled in on the Bid Form).
- F. The address and telephone number for communications regarding the Bid must be shown.
- G. As evidence of authority to conduct business as an out-of-state corporation in the state where the work is to be performed, see Paragraph 12.0.C above. State contractor license number, if any, must also be shown.

## 13.0 SUBMISSION OF BIDS

- A. Bids shall be submitted at the time and place indicated in the Invitation to Bid and shall be enclosed in a sealed envelope, addressed to Kyle Lindsay, Operations Director, Oconee Joint Regional Sewer Authority, OJRSA Treatment Plant, 623 Return Church Road, Seneca SC 29678. Each sealed envelope containing a Bid must be plainly marked on the outside as "Bid for Gravity Sewer Repair and Replacement", and the envelope should bear, on the outside, the name of the Bidder, his address, and his contractor's license number and accompanied by the Bid security and other required documents. If

the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face.

#### 14.0 MODIFICATION AND WITHDRAWAL OF BIDS

- A. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.
- B. If, within five calendar days after Bids are opened, any Bidder files a duly signed, written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its bid and the bid security will be returned; thereafter, that Bidder will be disqualified from further bidding on the work to be provided under the Contract Documents.
- C. A conditional or qualified bid will not be accepted.

#### 15.0 OPENING OF BIDS

- A. Bids will be opened and (unless obviously non-responsive) read aloud publicly at the place as indicated in the Advertisement or Invitation to Bid. An abstract of the amounts of the base Bids and major alternates (if any) will be made available to Bidders after the opening of Bids.

#### 16.0 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- A. All Bids will remain subject to acceptance for 90 days after the day of the bid opening, but Owner may, in its sole discretion, release any bid and return the bid security prior to that date.

#### 17.0 AWARD OF CONTRACT

- A. Owner reserves the right to reject any or all bids, including without limitation the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional bids and to reject the bid of any Bidder if Owner believes that it would not be in the best interest of the project to make an award to that Bidder, whether because the bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by Owner. Owner also reserves the right to waive all informalities not involving price, time, or changes in the work and to negotiate contract terms with the successful bidder. Discrepancies between the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.
- B. In evaluating bids, Owner will consider qualifications of Bidders, whether or not bids comply with prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

- C. Owner may consider the qualifications and experience of subcontractors, suppliers, and other persons and organizations proposed for those portions of the work as to which the identity of subcontractors, suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. Owner also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials, and equipment proposed for incorporation in the work when such data is required to be submitted prior to the Notice of Award.
- D. Owner may conduct such investigations as Owner deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications, and financial ability of bidders, proposed subcontractors, suppliers, and other persons and organizations to perform and furnish the work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.
- E. If the contract is to be awarded, it will be awarded to lowest Base Bid whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project taking into consideration all alternates, availability and is of best interest to Owner. The availability of funds for additive alternates(s) may be unknown at the time of the Opening of Bids. Therefore, the Owner shall make public announcement identifying the "Apparent Low Bidder," contingent upon evaluation as set forth in these instructions.
- F. If the contract is to be awarded, Owner will give successful bidder a Notice of Award within 90 days after the date of the bid opening.

#### 18.0 CONTRACT SECURITY

- A. Paragraph 5.1 of the General Conditions sets forth Owner's requirements as to performance and payment bonds. When the successful bidder delivers the executed Agreement to Owner, it must be accompanied by the required performance and payment bonds.

#### 19.0 SIGNING OF AGREEMENT

- A. When Owner gives a Notice of Award to the successful bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within 10 days thereafter Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner with the required bonds. In case of failure of the Bidder to execute the Agreement, the Owner may at his option consider the Bidder in default; in which case the bid bond accompanying the proposal shall become the property of the Owner.

The Owner, within 10 days of receipt of acceptable Performance Bond, Payment Bond, and Agreement signed by the party to whom the Agreement was awarded, shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the Owner not execute the Agreement within such period, the Bidder may, by written notice, withdraw his signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the Owner.

DOCUMENT 00 31 00  
AVAILABLE PROJECT INFORMATION

1.1 SUMMARY

- A. Document Includes information available for bidders:
  - 1. Close Circuit Television (CCTV) Reports and Videos
- B. Related Documents:
  - 1. Document 00 21 13 - Instructions to Bidders: Site Examination.

1.2 CCTV INVESTIGATION REPORT and Videos

- A. A copy of a CCTV reports and video with respect to the pipelines is available for viewing at the office of the Engineer titled as follows:
  - 1. Dated: December 2, 2022.
  - 2. Prepared by: Oconee Joint Regional Sewer Authority.

DOCUMENT 00 40 00  
**AFFIDAVIT OF COMPLIANCE**

**With State E-Verify Statutes**

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

I, \_\_\_\_\_ (hereinafter the "Affiant"), duly authorized by and on behalf of \_\_\_\_\_ (hereinafter the "Employer") after being first duly sworn deposes and says as follows:

1. I am the \_\_\_\_\_ (President, Manager, CEO, etc.) of the Employer and possess the full authority to speak for and on behalf of the Employer identified above.
2. Employer understands that "E-Verify" means the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law.
3. \_\_\_\_\_ Employer employs 25 or more employees in the state and is in compliance with the provisions of state statutes. Employer has verified the work authorization of its employees through E-Verify and shall retain the records of verification for a period of at least one year.  
  
\_\_\_\_\_ Employer employs fewer than 25 employees and is therefore not subject to the provisions of state statutes.
4. All subcontractors engaged by or to be engaged by Employer have or will have likewise complied with the provisions of state statutes.
5. Employer shall keep W.K. Dickson & Co., Inc. informed of any change in its status.

This the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Signature of Affiant  
Print or Type Name: \_\_\_\_\_

STATE OF \_\_\_\_\_

COUNTY OF \_\_\_\_\_

Sworn to and subscribed before me, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Notary Public

[SEAL]

My commission expires: \_\_\_\_\_



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DOCUMENT 00 41 43  
BID FORM – UNIT PRICE

Proposal of \_\_\_\_\_ (hereinafter called "Bidder");  
(Bidder)

organized and existing under the laws of the State of \_\_\_\_\_, doing business as ( ) a corporation, ( ) a partnership, ( ) an individual for \_\_\_\_\_, (hereinafter called "Owner").

In compliance with your Invitation to Bid, Bidder hereby proposes to perform all work for the construction of Work Plan (2022) Corrective Repairs, in strict accordance with the Contract Documents, within the time set forth therein, and at the prices stated below.

By submission of this Bid, each Bidder certifies, and in the case of a joint Bid each party thereto certifies as to his own organization, that this Bid has been arrived at independently, without consultation, communication, or agreement as to any matter relating to this Bid with any other Bidder or with any competitor.

Bidder hereby agrees to commence work under this contract on or before a date to be specified in the Notice to Proceed and to fully complete the project within 45 consecutive calendar days thereafter. Bidder further agrees to pay as liquidated damages, the sum of **\$1,000** for each consecutive calendar day ***that the Contractor fails to complete the work indicated*** thereafter. Contract Documents – Are defined in the Agreement Form (Document 00 52 15) and Standard General Conditions (Document 00 72 15).

Bidder acknowledges receipt of the following Addenda:

Addendum No. 1, dated \_\_\_\_\_, Signature \_\_\_\_\_  
Addendum No. 2, dated \_\_\_\_\_, Signature \_\_\_\_\_  
Addendum No. 3, dated \_\_\_\_\_, Signature \_\_\_\_\_  
Addendum No. 4, dated \_\_\_\_\_, Signature \_\_\_\_\_  
Addendum No. 5, dated \_\_\_\_\_, Signature \_\_\_\_\_

**ITEMIZED PROPOSAL FORM**

<b>BASE BID</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>General Construction - Lump Sum Items</b>					
1	Mobilization	LS	1		
2	Bonds and Insurance (not to exceed 1.5% of Base Bid)	LS	1		
3	Erosion and Sediment Control (Design and Permit)	LS	1		
4	Temporary Wetland/Stream/Creek Crossing	EA	1		
5	Dewatering	LS	1		
<b>Sewer Gravity Main Repairs and Replacement</b>					
6	Structural Fill (No. 57 Stone)	CY	45		
7	Riprap Slope Stabilization	SY	60		
8	Clearing & Grubbing	AC	0.10		
9	Permanent Grassing	LS	1		
<b>Sheet C3 Sanitary Sewer Gravity Main Replacement (MH 157 - MH 156)</b>					
10	15" PVC - C905 Gravity Sewer (8'-10' Depth)	LF	333		
<b>BASE BID TOTAL:</b>					

**Base Bid Total IN WORDS:**

Contract Time: 45 Calendar Days

Deduct all work, equipment, and materials associated with setup and maintenance of bypass pumping, and coordinate with Owner for bypass system setup for repairs indicated on Sheet C3 of the Drawings. Include labor to coordinate with Owner.

<b>DEDUCTIVE ALTERNATIVE (BASE BID)</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>Sheet C3 Sanitary Sewer Gravity Main Replacement Bypassing</b>					
1	Owner Bypass System Setup	LS	1		
<b>DEDUCTIVE ALTERNATIVE (BASE BID) TOTAL:</b>					

**Deductive Alternative (Base Bid) Total IN WORDS:**

Contract Time: Add 5 Calendar Days

<b>ADDITIVE ALTERNATE A</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>General Construction - Lump Sum Items</b>					
1	Bypass Pumping (above 2.0 MGD)	LS	1		
2	Temporary Wetland/Stream/Creek Crossing	EA	1		
3	Dewatering	LS	1		
<b>Sewer Gravity Main Repairs and Replacement</b>					
4	Structural Fill (No. 57 Stone)	CY	20		
5	Riprap Slope Stabilization	SY	60		
6	Clearing & Grubbing	AC	0.10		
7	Permanent Grassing	LS	1		
<b>Sheet C4 Sanitary Sewer Gravity Main Replacement (MH 53 - MH 52)</b>					
8	Point Repairs to Gravity Sewer Main				
a	30" PVC – C900 Pipe (0'-10' deep, 40-Feet in Length)	EA	1		
<b>ALTERNATE A TOTAL:</b>					

**Additive Alternate A Total IN WORDS:**

Contract Time: Add 7 Calendar Days

Deduct all work, equipment, and materials associated with setup and maintenance of bypass pumping, and coordinate with Owner for bypass system setup for repairs indicated on Sheet C4 of the Drawings. Include labor to coordinate with Owner.

<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE A)</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>Sheet C4 Sanitary Sewer Gravity Main Replacement Bypassing</b>					
1	Owner Bypass System Setup	LS	1		
<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE A) TOTAL:</b>					

**Deductive Alternative (ALTERNATIVE A) Total IN WORDS:**

Contract Time: Add 5 Calendar Days

<b>ADDITIVE ALTERNATE B</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>General Construction - Lump Sum Items</b>					
1	Temporary Wetland/Stream/Creek Crossing	EA	1		
2	Dewatering	LS	1		
<b>Sewer Gravity Main Repairs and Replacement</b>					
3	Structural Fill (No. 57 Stone)	CY	10		
4	Riprap Slope Stabilization	SY	60		
5	Clearing & Grubbing	AC	0.10		
6	Permanent Grassing	LS	1		
<b>Sheet C5 Sanitary Sewer Gravity Main Replacement (MH 913 - MH 912 - MH 911)</b>					
7	Point Repairs to Gravity Sewer Main				
a	10" PVC - C900 Pipe (0'-10' deep, 20-Feet in Length)	EA	1		
b	10" PVC - C900 Pipe (10'-15' deep, 20-Feet in Length)	EA	1		
<b>ALTERNATE B TOTAL:</b>					

**Additive Alternate B Total IN WORDS:**

Contract Time: Add 7 Calendar Days

Deduct all work, equipment, and materials associated with setup and maintenance of bypass pumping, and coordinate with Owner for bypass system setup for repairs indicated on Sheet C5 of the Drawings. Include labor to coordinate with Owner.

<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE B)</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>Sheet C5 Sanitary Sewer Gravity Main Replacement Bypassing</b>					
1	Owner Bypass System Setup	LS	1		
<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE B) TOTAL:</b>					

**Deductive Alternative (ALTERNATIVE B) Total IN WORDS:**

Contract Time: Add 5 Calendar Days

<b>ADDITIVE ALTERNATE C</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>General Construction - Lump Sum Items</b>					
1	Temporary Wetland/Stream/Creek Crossing	EA	1		
2	Dewatering	LS	1		
<b>Sewer Gravity Main Repairs and Replacement</b>					
3	Structural Fill (No. 57 Stone)	CY	10		
4	Riprap Slope Stabilization	SY	60		
5	Clearing & Grubbing	AC	0.10		
6	Permanent Grassing	LS	1		
<b>Sheet C6 Sanitary Sewer Gravity Main Replacement (MH 897 - MH 896)</b>					
7	Point Repairs to Gravity Sewer Main				
a	10" PVC – C900 Pipe (0'-10' deep, 20-Feet in Length)	EA	1		
b	10" PVC – C900 Pipe (0'-10' deep, 10-Feet in Length)	EA	1		
c	10" PVC – C900 Pipe (0'-10' deep, 10-Feet in Length)	EA	1		
<b>ALTERNATE C TOTAL:</b>					

**Additive Alternate C Total IN WORDS:**

Contract Time: Add 7 Calendar Days

Deduct all work, equipment, and materials associated with setup and maintenance of bypass pumping, and coordinate with Owner for bypass system setup for repairs indicated on Sheet C6 of the Drawings. Include labor to coordinate with Owner.

<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE C)</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>Sheet C6 Sanitary Sewer Gravity Main Replacement Bypassing</b>					
1	Owner Bypass System Setup	LS	1		
<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE C) TOTAL:</b>					

**Deductive Alternative (ALTERNATIVE C) Total IN WORDS:**

Contract Time: Add 5 Calendar Days

<b>ADDITIVE ALTERNATE D</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>General Construction - Lump Sum Items</b>					
1	Temporary Wetland/Stream/Creek Crossing	EA	1		
2	Dewatering	LS	1		
<b>Sewer Gravity Main Repairs and Replacement</b>					
3	Structural Fill (No. 57 Stone)	CY	10		
4	Riprap Slope Stabilization	SY	60		
5	Clearing & Grubbing	AC	0.10		
6	Permanent Grassing	LS	1		
<b>Sheet C7 Sanitary Sewer Gravity Main Replacement (MH 893 - MH 892)</b>					
7	Point Repairs to Gravity Sewer Main				
a	10" PVC – C900 Pipe (0'-10' deep, 20-Feet in Length)	EA	1		
<b>ALTERNATE D TOTAL:</b>					

**Additive Alternate D Total IN WORDS:**

Contract Time: Add 7 Calendar Days

Deduct all work, equipment, and materials associated with setup and maintenance of bypass pumping, and coordinate with Owner for bypass system setup for repairs indicated on Sheet C7 of the Drawings. Include labor to coordinate with Owner.

<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE D)</b>					
Item No.	Item Description	Unit	Unit Quantity	Unit Price	Total Bid Price
<b>Sheet C7 Sanitary Sewer Gravity Main Replacement Bypassing</b>					
1	Owner Bypass System Setup	LS	1		
<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE D) TOTAL:</b>					

**Deductive Alternative (ALTERNATIVE D) Total IN WORDS:**

Contract Time: Add 5 Calendar Days

<b>BASE BID TOTAL:</b>	<b>\$</b>
<b>DEDUCTIVE ALTERNATIVE (BASE BID):</b>	<b>\$</b>
<b>ADDITIVE ALTERNATE A TOTAL:</b>	<b>\$</b>
<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE A):</b>	<b>\$</b>
<b>ADDITIVE ALTERNATE B TOTAL:</b>	<b>\$</b>
<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE B):</b>	<b>\$</b>
<b>ADDITIVE ALTERNATE C TOTAL:</b>	<b>\$</b>
<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE C):</b>	<b>\$</b>
<b>ADDITIVE ALTERNATE D TOTAL:</b>	<b>\$</b>
<b>DEDUCTIVE ALTERNATIVE (ALTERNATIVE D):</b>	<b>\$</b>
<b>CONTINGENCY ALLOWANCE:</b>	<b>\$ 40,000.00</b>
<b>TOTAL BID PRICE (BASE BID + CONTINGENCY ALLOWANCE+ALL ALTERNATES):</b>	<b>\$</b>

**TOTAL BID PRICE**

Having examined the Contract Documents for the above-mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the following Total Bid Price of:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)  
 (Words) (Numbers)

The undersigned hereby agrees that, upon written acceptance of this bid, he will within 10 days of receipt of such notice execute a formal contract agreement with the Owner, and that he will provide the bond or guarantees required by the contract documents.

The undersigned hereby agrees that, if awarded the contract, he will commence the work in accordance with required contract performance dates based upon a written notice to proceed per each qualified task order. The undersigned hereby also agrees that the work will be completed within a time frame reasonable to accomplish the work, or that which has been mutually agreed upon by the OJRSA, based on the scope for work for the task order as assigned.



Enclosed is a bid guarantee consisting of \_\_\_\_\_ in the Amount of \_\_\_\_\_.

Respectfully submitted:

\_\_\_\_\_  
Business Name

\_\_\_\_\_  
Business Address

\_\_\_\_\_  
Printed/Typed Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of Licensing State and License Number

\_\_\_\_\_  
Corporate (Partnership) Address

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
State of Incorporation

Seal - If Bid is by a corporation

\_\_\_\_\_  
Telephone Number

Attest: \_\_\_\_\_  
Name

\_\_\_\_\_  
Title

Note: For a valid bid, the Bid Form and Bid Bond must both be properly signed by the President of the firm, or an officer authorized to sign contracts for the firm.

DOCUMENT 00 43 13  
BID BOND

**KNOW ALL MEN BY THESE PRESENTS**, that we, the undersigned, \_\_\_\_\_ as Principal, and \_\_\_\_\_ as Surety, are hereby held and firmly bound unto \_\_\_\_\_ as OWNER in the penal sum of \$ \_\_\_\_\_ for the payment of which well and truly to be made, we hereby jointly and severally bind ourselves, successors, and assigns. Signed this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_. The condition of the above obligation is such that whereas the Principal has submitted to \_\_\_\_\_ a certain Bid, attached hereto and hereby made a part hereof, to enter into a contract in writing, for the construction of Work Plan (2022) Corrective Repairs.

**NOW THEREFORE,**

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

then this obligation shall be void; otherwise, the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

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

\_\_\_\_\_  
Principal

By: \_\_\_\_\_

\_\_\_\_\_  
Surety

By: \_\_\_\_\_

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

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DOCUMENT 00 51 00  
NOTICE OF AWARD

TO: [ \_\_\_\_\_ ]  
[ \_\_\_\_\_ ]  
[ \_\_\_\_\_ ]

Project Description: Rehabilitation of the existing RCP and VCP gravity sewer trunk line in on the Oconee Joint Regional Sewer Authority's (OJRSA) system. Repairs include replacing approximately 333 LF of 15" VCP sewer trunkline and connecting to the existing manholes, six (6) point repairs of 10" sewer trunkline located at various locations in the system and lengths requiring repair varying between 10 LF to 60 LF, and one (1) point repair of approximately 60 LF of 30" sewer trunkline. OJRSA easements and locations of repairs are generally located in and near creeks with potential creek crossings. Contractor will be responsible for coordination with SCDOT and SCDHEC to acquire necessary permits and permissions to complete the work.

The Owner has considered the bid submitted by you on [ \_\_\_\_\_ ] for the above described Work in response to its Invitation to Bid.

You are hereby notified that your Bid has been accepted in the amount of \$[\_\_\_\_\_].

You are required by the Instructions to Bidders to execute the Agreement form and furnish the required Contractor's Performance Bond, Payment Bond, Power of Attorney, and Certificates of Insurance within ten calendar days from the date of this notice to you.

If you fail to execute said Agreement form and to furnish said bonds within ten days from the date of this notice, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to acknowledge where indicated and return a copy of this Notice of Award to the Owner.

Dated this [ \_\_\_\_\_ ] day of [ \_\_\_\_\_ ], 20[\_\_\_\_].

Oconee Joint Regional Sewer Authority  
Owner  
By: Chris Eleazer, Executive Director  
(Printed/Typed Name)

ACCEPTANCE OF NOTICE OF AWARD  
Receipt of this Notice of Award is  
hereby acknowledged and accepted.

Signature:

Title: \_\_\_\_\_

\_\_\_\_\_  
Company Name

By: \_\_\_\_\_  
(Printed/Typed Name)

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

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DOCUMENT 00 52 15  
AGREEMENT FORM

THIS AGREEMENT, made the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_ by and between Oconee Joint Regional Sewer Authority, hereinafter called "Owner", and \_\_\_\_\_ doing business as ( ) a corporation, ( ) a partnership, ( ) an individual, hereinafter called "Contractor".

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

1. The Contractor will commence and complete the construction of Work Plan (2022) Corrective Repairs.

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

The Contractor will commence the work required by the Contract Documents within 10 calendar days after the date of the Notice to Proceed. Work will be fully complete within 45 calendar days from the date of the Notice to Proceed. Should the Contractor fail to complete the work within the time stated above, the Contractor agrees to pay as liquidated damages the sum of \$1,000 for each consecutive calendar day thereafter until said work is fully complete.

4. The Contractor agrees to perform all of the Work described in the Contract Documents and comply with the terms herein for the sum of \$[\_\_\_\_\_] (Words) [\_\_\_\_\_] as shown in the Bid.

5. The term "Contract Documents" means and includes the following:

- Invitation to Bid
- Instructions to Bidders
- Available Project Information
- [Affidavit of Compliance]
- Bid Form
- Bid Bond
- Notice of Award
- Agreement Form
- Notice to Proceed
- Performance Bond and Payment Bond
- Contractor's Affidavit
- Partial Payment Estimate
- General Conditions
- Supplementary Conditions
- Special Provisions
- Addendum
- Change Order
- Technical Specifications

Addenda

No. [ 1 ], Dated \_\_\_\_\_, 20\_\_\_\_ Signature \_\_\_\_\_

No. [ 2 ], Dated \_\_\_\_\_, 20\_\_\_\_ Signature \_\_\_\_\_

Drawings prepared by W. K. Dickson & Co. Inc., \_\_\_\_\_

\_\_\_\_\_ Numbered \_\_\_\_\_

\_\_\_\_\_ dated \_\_\_\_\_

6. The Owner will pay to the Contractor in the manner and such times as set forth in the General Conditions such amounts as required by the Contract Documents.

7. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

8. The Contractor certifies that it is not currently engaged in, and covenants that it will not, for the duration of the Contract, engage in a Boycott of Israel, as that term is defined by state law.

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

OWNER:

ATTEST:

Oconee Joint Regional Sewer Authority

By (Signature) \_\_\_\_\_

By (Signature) \_\_\_\_\_

Printed Name Chris Eleazer

Printed Name \_\_\_\_\_

Title Executive Director

Title \_\_\_\_\_

(Seal)

CONTRACTOR:

ATTEST:

\_\_\_\_\_

By (Signature) \_\_\_\_\_

By (Signature) \_\_\_\_\_

Printed Name \_\_\_\_\_

Printed Name \_\_\_\_\_

Title \_\_\_\_\_

Title \_\_\_\_\_

(Seal)



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DOCUMENT 00 55 00  
NOTICE TO PROCEED

TO: [ \_\_\_\_\_ ]  
[ \_\_\_\_\_ ]  
[ \_\_\_\_\_ ]  
[ \_\_\_\_\_ ]  
[ \_\_\_\_\_ ]

DATE: [ \_\_\_\_\_ ]

PROJECT: Work Plan (2022) Corrective  
Repairs

\_\_\_\_\_  
\_\_\_\_\_

You are hereby notified to commence work on or before [ \_\_\_\_\_ ]  
\_\_\_\_\_ ] in accordance with the Agreement dated [ \_\_\_\_\_ ], and you are to  
complete the work by 45 calendar days.

ACCEPTANCE OF NOTICE TO PROCEED  
Receipt of this Notice to Proceed is  
hereby acknowledged and accepted.

Oconee Joint Regional Sewer Authority  
Owner

By: Chris Eleazer, Executive Director  
(Printed/Typed Name)

\_\_\_\_\_  
Company Name

Signature: \_\_\_\_\_

By: \_\_\_\_\_  
(Printed/Typed Name)

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

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DOCUMENT 00 61 13  
PERFORMANCE BOND

DATE OF EXECUTION \_\_\_\_\_

NAME AND ADDRESS  
OF PRINCIPAL  
(CONTRACTOR) \_\_\_\_\_

NAME AND ADDRESS  
OF SURETY \_\_\_\_\_

NAME OF CONTRACT  
BODY (OWNER) \_\_\_\_\_

AMOUNT OF BOND \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the above named Contracting Body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that, whereas the principal entered into a certain contract with the Contracting Body, identified as shown above and hereto attached.

NOW THEREFORE, if the principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals on the date indicated above, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each one of which shall be deemed an original, the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
Principal (Contractor)

By: \_\_\_\_\_  
(Printed/Typed Name)

Signature: \_\_\_\_\_

Title: \_\_\_\_\_  
(Owner, Partner, or Corporate  
President or Vice President)

\_\_\_\_\_

\_\_\_\_\_  
Principal Address

(Corporate Seal)

Witness as to Principal:

By: \_\_\_\_\_  
(Printed/Typed Name)

Signature: \_\_\_\_\_

Title: \_\_\_\_\_  
(Corporate Secretary or Assistant  
Secretary)

\_\_\_\_\_  
Surety Company Name

By: \_\_\_\_\_  
(Printed/Typed Name)

Signature: \_\_\_\_\_

Title: \_\_\_\_\_  
(Attorney-in-Fact)

(Surety Seal)

Witness as to Surety:

Countersigned:

By: \_\_\_\_\_  
S.C. Licensed Resident Agent  
(Printed/Typed Name)

Signature: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Surety Company Name and  
S. C. Regional or Branch Office Address

NOTE:

1. Date of Bond must not be prior to date of Contract (Agreement).
2. If Contractor is partnership, all partners should execute bond.
3. Surety companies executing bonds must appear on the U.S. Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

DOCUMENT 00 61 15  
PAYMENT BOND

DATE OF EXECUTION \_\_\_\_\_

NAME AND ADDRESS  
OF PRINCIPAL  
(CONTRACTOR) \_\_\_\_\_

NAME AND ADDRESS  
OF SURETY \_\_\_\_\_

NAME OF CONTRACT  
BODY (OWNER) \_\_\_\_\_

AMOUNT OF BOND \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that we, the Principal and Surety above named, are held and firmly bound unto the above named Contracting body, hereinafter called the Contracting Body, in the penal sum of the amount stated above for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that, whereas the principal entered into a certain contract with the Contracting Body, identified as shown above and hereto attached.

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

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

PROVIDED FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in \_\_\_\_\_ counterparts, each one of which shall be deemed an original, the \_\_\_\_\_ day of \_\_\_\_\_, 20 \_\_\_\_.

\_\_\_\_\_  
Principal (Contractor)

By: \_\_\_\_\_  
(Printed/Typed Name)

Signature: \_\_\_\_\_

Title: \_\_\_\_\_  
(Owner, Partner, or Corporate  
President or Vice President)

\_\_\_\_\_  
Principal Address

(Corporate Seal)

Witness as to Principal:

By: \_\_\_\_\_  
(Printed/Typed Name)

Signature: \_\_\_\_\_

Title: \_\_\_\_\_  
(Corporate Secretary or Assistant  
Secretary)

\_\_\_\_\_  
Surety Company Name

By: \_\_\_\_\_  
(Printed/Typed Name)

Signature: \_\_\_\_\_

Title: \_\_\_\_\_  
(Attorney-in-Fact)

(Surety Seal)

Witness as to Surety:

Countersigned:

By: \_\_\_\_\_  
S. C. Licensed Resident Agent  
(Printed/Typed Name)

Signature: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Surety Company Name and  
S. C. Regional or Branch Office Address

NOTE:

1. Date of Bond must not be prior to date of Contract (Agreement).
2. If Contractor is partnership, all partners should execute bond.
3. Surety companies executing bonds must appear on the U.S. Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.



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DOCUMENT 00 61 16  
CONTRACTOR'S AFFIDAVIT RELATED TO LIENS AND CLAIMS

STATE OF SOUTH CAROLINA  
COUNTY OF \_\_\_\_\_

On this day, \_\_\_\_\_, being duly sworn, deposes and says that he is the \_\_\_\_\_  
\_\_\_\_\_ of \_\_\_\_\_ (Contractor)  
who entered into a contract, \_\_\_\_\_  
\_\_\_\_\_ dated \_\_\_\_\_  
, with Oconee Joint Regional Sewer Authority (Owner) for furnishing materials and labor in the erection  
and construction of facilities defined in the Contract Documents, such erection and construction having  
been completed.

Further, that in accordance with the Contract Documents and applicable Statutes of the State of South  
Carolina the undersigned hereby declares that the claims of all subcontractors, materialmen, laborers, and  
all other persons and parties furnishing labor and materials with respect to the above mentioned Contract  
have been paid in full except as follows:

_____	_____
_____	_____
_____	_____
_____	_____

Affiant further states that, by execution of this affidavit, he agrees to indemnify and save harmless the  
Owner from any liability for payment of said deficiencies in the stated amounts or any part thereof.

\_\_\_\_\_  
Contractor

Subscribed and sworn to before me

this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

\_\_\_\_\_  
Notary Public

My Commission Expires: \_\_\_\_\_

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**Contractor's Application for Payment No.**

1

Application Period:		Application Date:
To (Owner):	From (Contractor):	Via (Engineer): W.K. Dickson & Co., Inc.
Project: Project Name	Contract: Work Plan (2022) Corrective Repairs	
Owner's Contract No.: XXX	Contractor's Project No.:	Engineer's Project No.: 20230009.00.GV

**Application For Payment  
Change Order Summary**

Approved Change Orders		
Number	Additions	Deductions
TOTALS		
NET CHANGE BY CHANGE ORDERS		

1. ORIGINAL CONTRACT PRICE WITHOUT CONTINGENCY..... \$ \_\_\_\_\_
2. REMAINING CONTINGENCY..... \$ \_\_\_\_\_
3. Net change by Change Orders..... \$ \_\_\_\_\_
4. Current Contract Price (Line 1 ± 2 ± 3)..... \$ \_\_\_\_\_
5. TOTAL COMPLETED AND STORED TO DATE  
(Columns F and H total on Progress Estimates)..... \$ \_\_\_\_\_
6. RETAINAGE:
  - a. 5% X \_\_\_\_\_ Work Completed..... \$ \_\_\_\_\_
  - b. 5% X \_\_\_\_\_ Stored Material..... \$ \_\_\_\_\_
  - c. Total Retainage (Line 6.a + Line 6.b)..... \$ \_\_\_\_\_
7. AMOUNT ELIGIBLE TO DATE (Line 5 - Line 6.c)..... \$ \_\_\_\_\_
8. LESS PREVIOUS PAYMENTS (Line 7 from prior Application)..... \$ \_\_\_\_\_
9. LIQUIDATED DAMAGES..... \$ \_\_\_\_\_
10. AMOUNT DUE THIS APPLICATION..... \$ \_\_\_\_\_
11. BALANCE TO FINISH, PLUS RETAINAGE  
(Column G total on Progress Estimates + Line 6.c above)..... \$ \_\_\_\_\_

**Weather Days**

Weather Days Requested this Pay Application	
Weather Days from Previous Applications	
Total Weather Days	

Payment of: \$ \_\_\_\_\_  
(Line 10 or other - attach explanation of the other amount)

**Contractor's Certification**

The undersigned Contractor certifies, to the best of its knowledge, the following:  
 (1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;  
 (2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and  
 (3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

is recommended by: \_\_\_\_\_ (Engineer) \_\_\_\_\_ (Date)

Payment of: \$ \_\_\_\_\_  
(Line 10 or other - attach explanation of the other amount)

is approved by: \_\_\_\_\_ (Owner) \_\_\_\_\_ (Date)

**Contractor Signature**

By:	Date:
-----	-------

Approved by: \_\_\_\_\_  
Funding or Financing Entity (if applicable) \_\_\_\_\_ (Date)

**CONTRACT TIME**

Original (days) _____	On Schedule: <input type="checkbox"/> Yes <input type="checkbox"/> No	Starting Date _____
Revised _____		Contract Completion Date _____
Remaining _____		Project Completion Date _____

**Progress Estimate - Unit Price Work**

**Contractor's Application**

For (Contract): Work Plan (2022) Corrective Repairs										Application Number:			
Application Period:										Application Date:			
A					B	C	D	E	F	G	H		I
Item		Contract Information				Previous Quantity Installed	Current Quantity Installed	Estimated Quantity Installed	Value of Work Installed to Date	Materials Presently Stored (not in E)	Total Completed and Stored to Date (F + G)	% (H / B)	Balance to Finish (B - H)
Bid Item No.	Description	Item Quantity	Units	Unit Price	Total Value of Item (\$)								
	<b>DIVISION 1, SCHEDULE A - XXXXX</b>												
1	TBD	1	LS	-									
2	TBD		LS	-									
3	TBD		LS	-									
4	TBD		LS	-									
5	TBD		LS	-									
6	TBD		LS	-									
7	TBD		LS	-									
8	TBD		LS	-									
9	TBD		LS	-									
10	TBD		LS	-									
11	TBD		LS	-									
12	TBD		LS	-									
13	TBD		LS	-									
14	TBD		LS	-									
15	TBD		LS	-									
16	TBD		LS	-									
17	TBD		LS	-									
	<b>DIVISION 1, SCHEDULE A - XXXXX:</b>												

**Document 00 72 15**

**STANDARD GENERAL CONDITIONS**

**OF THE**

**CONSTRUCTION CONTRACT**

**GENERAL CONDITIONS  
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## ARTICLE 1.0 – DEFINITIONS AND TERMINOLOGY

### 1.1 Defined Terms

Wherever used in the Contract Documents and printed with initial or all capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof.

A. Addenda: Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the Contract Documents.

B. Agreement: The written instrument which is evidence of the Agreement between Owner and Contractor covering the Work.

C. Asbestos: Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

D. Bid: The offer or proposal of a bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

E. Bidding Documents: The Bidding Requirements and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

F. Bidding Requirements: The Advertisement or Invitation to Bid, Instructions to Bidders, Bid security form, if any, and the Bid form with any supplements.

G. Bonds: Performance and payment Bonds and other instruments of security.

H. Change Order: A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract price or the Contract Times, issued on or after the Effective Date of the Agreement.

I. Claim: A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

J. Contract: The entire and integrated written Agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or Agreements, whether written or oral.

K. Contract Documents: The Contract Documents establish the rights and obligations of the

parties and include the Agreement, Addenda (which pertain to the Contract Documents), Contractor's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders, and Engineer's written interpretations and clarifications issued on or after the effective date of the Agreement. Approved Shop Drawings and the reports and Drawings of subsurface and physical conditions are not Contract Documents. Only printed or hard copies of the items listed in this Article are Contract Documents. Files in electronic media format of text, data, graphics, and the like that may be furnished by Owner to Contractor are not Contract Documents.

L. Contract Price: The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Article 11.3 in the case of Unit Price Work).

M. Contract Times: The number of days or the dates stated in the Agreement to complete the Work so that it is ready for final payment as evidence by Engineer's written recommendation of final payment.

N. Contractor: The individual or entity with whom Owner has entered into the Agreement.

O. Cost of the Work: See Article 11.1, Paragraph A. for definition.

P. Drawings: That part of the Contract Documents prepared approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

Q. Effective Date of the Agreement: The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

R. Engineer: The Engineer for this Project is **W. K. Dickson & Co., Inc.**

S. Engineer's Consultant: An individual or entity having a Contract with Engineer to furnish services as Engineer, independent professional associate, or consultant with respect to the Project.

T. Engineer's Project Representative: The authorized representative of Engineer who may be assigned to the Site or any part thereof.

U. Field Order: A written order issued by Engineer which requires minor changes in the Work but

which does not involve a change in the Contract Price or the Contract Times.

V. General Requirements: Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

W. Hazardous Environmental Condition: The presence at the Site of asbestos, PCBs, Petroleum, Hazardous Waste, or radioactive material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

X. Hazardous Waste: The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

Y. Laws and Regulations; Laws or Regulations: Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

Z. Liens: Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

AA. Liquidated Damages: An amount agreed to by the parties as an estimate of Owner's actual damages, set forth on a calendar day basis, to compensate Owner for its damages (and not as a penalty) in the event Contractor fails to complete the Work in the Contract Time, or any authorized extensions thereof, by the date or dates established in the Contract Documents.

BB. Milestone: A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

CC. Notice of Award: The Written Notice by Owner to the apparent successful bidder stating that upon timely compliance by the apparent successful bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

DD. Notice to Proceed: A Written Notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

EE. Owner: The individual, entity, public body, or authority with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

FF. Partial Payment Estimate: The form acceptable to Engineer which is to be used during the course of the Work in requesting progress or final payments for construction and which is to be accompanied

by such supporting documentation as is required by the Contract Documents.

GG. Partial Utilization: Use by Owner of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

HH. PCBs: Polychlorinated biphenyls.

II. Petroleum: Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, Petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-hazardous waste and crude oils.

JJ. Project: The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part as may be indicated elsewhere in the Contract Documents.

KK. Project Manual: The bound documentary information prepared for bidding and construction the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

LL. Radioactive Material: Source, special nuclear, or byproduct material as defined by the atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

MM. Samples: Physical examples of materials, equipment, or Workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

NN. Shop Drawings: All Drawings, diagrams, illustration, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

OO. Site: Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including right-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

PP. Specifications: That part of the Contract Documents consisting of written technical descriptions of materials, equipment, systems, standards, and Workmanship as applied to the Work and certain administrative details applicable thereto.

QQ. Subcontractor: An individual or entity having a direct contact with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

RR. Substantial Completion: The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.

SS. Supplementary Condition: That part of the Contract Documents which amends or supplements these General Conditions.

TT. Supplier: A manufacturer, fabricator, Supplier, distributor, materialman, or vendor having a direct Contract with Contractor or with any subcontract to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

UU. Underground Facility or Facilities: All underground pipeline, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic of other control systems.

VV. Unit Price Work: Work to be paid for on the basis of unit prices.

WW. Work: The entire completed construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

XX. Work Change Directive: A written statement to Contractor issued on or after the effective date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

YY. Written Amendment: A written statement modifying the Contract Documents, signed by Owner and Contractor on or after the effective date of the Agreement and normally dealing with the non-engineering or

non-technical rather than strictly construction-related aspects of the Contract Documents.

ZZ. Resident Observer: Shall have the same definition as “Resident Project Representative” when referred to in these documents or during the duration of the Project.

AAA. Acceptance: By the Owner of the Work as being fully complete in accordance with the Contract Documents subject to waiver of claims.

BBB. Written Notice: The “Notice” as used herein shall mean and include all Written Notices, demands, instruction, claims, approvals, and disapprovals required to obtain compliance with Contract requirements. Written Notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or to an authorized representative of such individual, firm or corporation, or if delivered at or sent by registered mail to the last business address known to him who gives the notice. Unless otherwise stated in writing, any notice to or demand upon the Owner under this Contract shall be delivered to the Owner through the Engineer.

## 1.2 Terminology

### A. Intent of Certain Terms or Adjectives

1. Whenever in the Contract Documents the terms “as allowed”, “as approved”, or terms of like effect or import are used, or the adjectives “reasonable”, “suitable”, “acceptable”, “proper”, “satisfactory”, or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work, it is intended that such action or determination will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Article 9.9 or any other provision of the Contract Documents.

B. Day: The word “day” shall constitute a calendar day or 24 hours measured from midnight to the next midnight.

C. Defective: The word “defective”, when modifying the word “Work”, refers to Work that is unsatisfactory, faulty, or deficient in that it does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test, or approval referred to in the Contract Documents, or has been

damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Article 14.4 or 14.5).

D. Furnish, Install, Perform, Provide

1. The word "furnish", when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The Work "install", when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide", when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When "furnish", "install", "perform", or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

E. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

**ARTICLE 2.0 – PRELIMINARY MATTERS**

2.1 Delivery of Bonds

A. When Contractor delivers the executed Agreements to Owner, Contractor shall also deliver to Owner such Bonds as Contractor may be required to furnish.

2.2 Copies of Documents

A. The Contractor will be furnished without charge a complete set of Specifications and Drawings in pdf format, delivered electronically, as well as one original executed Contract Document.

2.3 Commencement of Contract Times – Notice to Proceed

A. The Contract Time will commence to run on the day indicated in the Notice to Proceed; but in no event will the Contract Time commence to run later than the 90<sup>th</sup> day after the day of Bid opening or the 30<sup>th</sup> day after the effective date of the Agreement. By mutual

consent of the parties to the Contract, these time limits may be changed.

2.4 Starting the Work

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.5 Before Starting Construction

A. Contractor's Review of Contract Documents: Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby; however, Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Preliminary Schedules: Within ten days after the effective date of the Agreement (unless otherwise specified in the General Requirements) Contractor shall submit following schedules to Engineer for timely review:

1. A preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. A preliminary schedule of shop drawing and sample submittals which will list each required submittal and the times for submitting, reviewing, and processing such submittal; and

3. A preliminary schedule of values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

C. Evidence of Insurance: The Contractor shall submit three copies of its insurance certificate simultaneous with submittal of his executed Contract Documents. The Contractor may use the "Accord Form" for the Certificate of Insurance. Contractor shall review "Accord Form" before forwarding to the Engineer.

2.6 Pre-Construction Conference

A. Within 20 days after the Contract Time starts to run, but before any Work at the Site is started, a

conference attended by Contractor, Engineer, and others as appropriate will be held to establish a Working understanding among the parties as to the Work and to discuss the schedules referred to in Article 2.5, Paragraph B., procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

#### 2.7 Initial Acceptance of Schedules

A. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Partial Payment Estimate a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Article 2.5, Paragraph B. Contractor shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

B. The progress schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within any specified Milestones and the Contract Times. Such Acceptance will not impose on Engineer responsibility or the progress schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

C. Contractor's schedule of shop drawing and sample submittals will be acceptable to Engineer if it provides a Workable arrangement for reviewing and processing the required submittals.

D. Contractor's schedule of values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

#### 2.8 Award

A. The award of the Contract, if it is awarded, will be to the lowest responsive, responsible bidder whose qualifications indicate the award will be in the best interest of the Owner and whose Bid complies with all the prescribed requirements. Notice of Award will not be given until the Owner has concluded such investigations as deemed necessary to establish the responsibility, qualifications, and financial ability of the bidders to execute the Work in accordance with the Contract Documents to the satisfaction of the Owner within the time prescribed. The Owner reserves the right to reject the Bid of any bidder who does not pass such investigation to the Owner's satisfaction. In analyzing Bids, the Owner may take into consideration alternates and unit prices, if requested in the Bid form. If the Contract is awarded, the Owner will give the successful bidder a Notice of Award within 90 days after the opening of Bids.

### ARTICLE 3.0 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

#### 3.1 Intent

A. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.0.

#### 3.2 Reference Standards

A. Standards, Specifications, Codes, Laws, and Regulations:

1. Reference to standards, Specifications, manuals, or codes of any technical society, organization, or association, or to laws or regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or laws or regulations in effect at the time of opening of Bids (or on the effective date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their Subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall any such provision or instruction be effective to assign to Owner, Engineer, or any of Engineer's Consultants, agents, or employees any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

#### 3.3 Reporting and Resolving Discrepancies

A. Reporting Discrepancies: If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any law or regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall report it to Engineer in writing at once. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Article

6.16, Paragraph A.) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Article 3.4; provided, however, that Contractor shall not be liable to Owner or Engineer for failure to report any such conflict, error, ambiguity, or discrepancy unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies: Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

1. The provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents) or

2. The provisions of any laws or regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such law or regulation).

### 3.4 Amending and Supplementing Contract Documents

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways: (i) a Written Amendment; (ii) a Change Order; or (iii) a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented and minor variations and deviations in the Work may be authorized by one or more of the following ways: (i) a Field Order; or (ii) Engineer's written interpretation or clarification.

### 3.5 Reuse of Documents

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing any of the Work under a direct or indirect contract with Owner: (i) shall not have or acquire any title in or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's Consultant, including electronic media editions; and (ii) shall not reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adoption by Engineer. This prohibition will survive final payment, completion, and Acceptance of the Work, or termination or completion of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

## ARTICLE 4.0 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

### 4.1 Availability of Lands

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Times, or both, as a result of any delay in Owner's furnishing the Site, Contractor may make a Claim therefor as provided in Article 10.5.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

### 4.2 Subsurface and Physical Conditions

A. Any testing reports or Drawings which are available or have been relied upon for this Project are identified or included in the Site Work sections of this specification.

B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the general accuracy of the technical data. Except for such reliance on such technical data, Contractor may not rely upon or make any Claim against Owner, Engineer, or any of Engineer's Consultants with respect to:

1. The completeness of such reports and Drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. Other data, interpretations, opinions, and information contained in such reports or shown or indicated in such Drawings; or

3. Any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinion, or information.

4.3 Differing Subsurface or Physical Conditions

A. Notice: If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

- 1. Is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Article 4.2 is materially inaccurate; or
- 2. Is of such a nature as to require a change in the Contract Documents; or
- 3. Differs materially from that shown or indicated in the Contract Documents; or
- 4. Is of an unusual nature, and differs materially from condition ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Contract Documents:

Then Contractor shall, after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Article 6.16, Paragraph A.), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. Engineer's Review: After receipt of Written Notice as required by Article 4.3, Paragraph A. Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. Possible Price and Time Adjustments:

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must meet any one or more of the categories described in Article 4.3, Paragraph A.; and
- b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Articles 9.8 and 11.3.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

- a. Contractor knew of the existence of such conditions at the time Contractor made a

final commitment to Owner in respect of Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated Contract; or

- b. The existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
- c. Contractor failed to give the Written Notice within the time and as required by Article 4.3, Paragraph A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Article 10.5. However, Owner, Engineer, and Engineer's Consultants shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other Project or anticipated Project.

4.4 Underground Facilities

A. Shown or Indicated: The information and data shown or indicated in the Contract Documents with respect to existing underground facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the Owners of such underground facilities, including Owner, or by others.

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. The cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

- a. Reviewing and checking all such information and data.
- b. Locating all underground facilities shown or indicated in the Contract Documents.
- c. Coordination of the Work with the Owners of such underground facilities, including Owner, during construction, and
- d. The safety and protection of all such underground facilities and repairing any damage thereto resulting from the Work.

B. Not Shown or Indicated:



1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Article 6.16, Paragraph A.), identify the owner of such Underground Facility and give Written Notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Article 10.5.

#### 4.5 Reference Points

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or required relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

#### 4.6 Hazardous Environmental Condition at Site

A. Reports and Drawings: Reference is made to these General Conditions for the identification of those reports and Drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. Limited Reliance by Contractor on Technical Data Authorized: Contractor may rely upon the

general accuracy of the technical data contained in such reports and Drawings, but such reports and Drawings are not Contract Documents. Except for such reliance on such "technical data", Contractor may not rely upon or make any Claim against Owner, Engineer or any of Engineer's Consultants with respect to:

1. The completeness of such reports and Drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. Other data, interpretations, opinions and information contained in such reports or shown or indicated in such Drawings; or

3. Any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Article 6.16); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor Written Notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Article 10.5.

F. If after receipt of such Written Notice Contractor does not agree to resume such Work based on a

reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Article 10.5. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.0.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, Engineer, Engineer's Consultants and the officers, directors, partners, employees, agents, other consultants, and Subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Article 4.6 shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Engineer, Engineer's Consultants, and the officers, directors, partners, employees, agents, other consultants, and Subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court of arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Article 4.6, Paragraph H. shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

1. The provisions of Articles 4.2, 4.3, and 4.4 are not intended to apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 5.0 – BONDS AND INSURANCE

### 5.1 Performance and Payment Bonds

A. Concurrent with execution of the Agreement and within ten days of the Notice of Award, the successful Contractor shall procure, execute, and deliver to the Owner and maintain, at his own cost and expense, the following Bonds, in the forms attached, of a surety

company approved by the state in which the Work is being performed as a Surety:

1. Performance Bond in an amount not less than 100% of the total amount payable to the Contractor by the terms of the Contract as security for the faithful performance of the Work. Bond must be valid until one year after the date of issuance of the Certificate of Substantial Completion.

2. Payment Bond in an amount not less than 100% of the total amount payable to the Contractor by the terms of the Contract as security for the payment of all persons performing labor and furnishing material in connection with the Work. Bond must be valid until one year after the date of issuance of the Certificate of Substantial Completion.

B. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act. Bonds shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department.

C. If the surety on any bond furnished by the Contractor is declared bankrupt or becomes insolvent or its right to do business in the state in which the Work is being performed is revoked, the Contractor shall, within ten days thereafter, substitute another bond or surety, both of which shall be acceptable to the Owner.

### 5.2 Insurance Requirements

A. Wherever in this Article the terms "The Insured" and "Owner" occur with respect to coverage in a policy, it shall mean the Owner and its agent and agencies, all municipalities where Work is being performed under the Contract, the Engineer, and any other parties specifically designated herein, who shall be named as insured in each policy issued. The insurance policies required herein shall not contain any Third Party Beneficiary Exclusion.

1. The Contractor shall not commence Work under the Contract until he has obtained all insurance required under this Article and such insurance has been approved by the Owner, nor shall the Contractor allow any Subcontractor to commence Work on his subcontract until all similar insurance required of the Subcontractor has been so obtained and approved.

2. Provision of some types of insurance by a Subcontractor may be waived, at the option of the Owner, where it is deemed that adequate coverage is provided by the Contractor's insurance. Subcontractors must, in all cases, provide Workmen's Compensation and Employer's Liability Insurance and Motor Vehicle Liability Insurance.

3. Contractor will make available to the Engineer, upon request, a copy of his certificates of insurance. Certificates must indicate type and amounts for each coverage required.

4. Should any of the described policies be cancelled before the expiration date thereof, the Contractor shall mail 30 days Written Notice to the certificate holder, provided this cancellation falls within the life of the Contract.

B. The Contractor shall, at his own cost, take out and maintain during the life of this Contract such Bodily Injury, Property Damage and Builders Risk Insurance as will protect him, the Insured, and any Subcontractor performing Work covered by this Contract from claims of any character for property damage or bodily injury, including death, and demands, suits, actions, recoveries and judgments against the Insured therefore, for which the Insured shall be or may become liable; which may arise from operations under this Contract whether such operations be by himself or by a Subcontractor or by anyone directly or indirectly employed by either of them, and as will also cover the contingent liability of The Insured, if any, which may arise from said operations under this Contract. The amounts of such insurance shall be as follows:

1. Bodily Injury Liability: For liability for bodily injury, including accidental or wrongful death, \$1,000,000 for any one person and, subject to the same limit for each person, \$1,000,000 on account of any one accident, subject to an aggregate limit of not less than \$2,000,000. Such insurance shall contain provisions that the aggregate limit applies separately to this Project.

2. Property Damage Liability: For liability for property damage, \$1,000,000 on account of any one accident, and \$1,000,000 on account of all accidents, subject to an aggregate limit of not less than \$2,000,000. Such insurance shall contain provisions that the aggregate limit applies separately to this Project.

3. Builders Risk or Fire and Extended Coverage: For fire and extended coverage, including vandalism and malicious mischief, an amount sufficient to cover the cost of replacement of Contractor's Work.

4. Umbrella Excess Liability: In addition to the requirements of the above paragraphs, the Contractor will be responsible for maintaining during the life of the Contract an Umbrella Excess Liability policy in the amount of \$5,000,000.

Insurance policies shall provide for reinstatement of full coverage after payment of any Claim.

C. The following types of insurance shall be provided:

1. Workmen's Compensation and Employer's Liability Insurance: The Contractor shall take

out and maintain during the life of this Contract, Workmen's Compensation and Employer's Liability Insurance for all of his employees, employees employed at the Site, and in case any Work is sublet, the Contractor shall require the Subcontractor similarly to provide Workmen's Compensation and Employer's Liability insurance for all employees of the latter unless such employees are covered by the protection afforded by the Contractor.

2. Contractor's Commercial General Liability: Liability for Contractor's bodily injury insurance shall be in the amounts specified in Article 5.2, hereinbefore.

3. Contractor's Contractual Bodily Injury Insurance: Liability for Contractor's Contractual Bodily Injury Insurance shall be in the amount specified in Article 5.2, hereinbefore.

4. Contractor's Property Damage Insurance: Liability for Contractor's Property Damage Insurance shall be in the amount specified in Article 5.2, hereinbefore.

5. Contractor's Contractual Property Damage Insurance: Liability for Contractor's Contractual Property Damage Insurance shall be in the amounts specified in Article 5.2, hereinbefore.

6. Motor Vehicle Liability Insurance:  
a. Bodily Injury Insurance covering the operation of all motor vehicles owned by the Contractor, or used by the Contractor in the prosecution of the Work under the Contract, shall be in the amount specified in Article 5.2, hereinbefore.

b. Property Damage Insurance covering the operation of all motor vehicles owned by the Contractor, or used by the Contractor in the prosecution of the Work under the Contract, shall be in the amount specified in Article 5.2, hereinbefore.

7. Special Hazards Insurance: Bodily Injury and Property Damage Insurance shall be in the amount specified in Article 5.2, hereinbefore when bodily injury and property damage results from the following special hazards:

a. Blasting and explosion.

b. Collapse of or structural injury to any structure due to the Contractor's operations.

c. Damage to underground structures, pipes, or conduits.

8. Fire and Extended Coverage Insurance: Builder's Risk (fire and extended coverage, including vandalism and malicious mischief) Insurance for the life of the Contract upon all Work in place, or materials

at the Site, or both, shall be in the amount specified in Article 5.2, hereinbefore.

9. Completed Operation Hazards Insurance: Completed Operations Hazards Insurance is to be provided for all the named insured in the amounts set forth in Article 5.2, hereinbefore, for 3 years from date of Substantial Completion. The intent of this Article is to provide coverage to all of the named insureds for claims which may arise from operations under this Contract.

10. Umbrella Excess Liability Insurance shall be provided in amount specified in Article 5.2, providing excess coverage for insurance required above.

D. If any of the property and casualty insurance requirements are not complied with at their renewal dates, payments to the Contractor will be withheld until these requirements have been met, or at the option of the Owner, the Owner may pay the renewal premiums and withhold such payments from any monies due to the Contractor.

E. In the event that claims in excess of the insured amounts provided herein are filed by reason of any operations under the Contract, the amount of excess of such claims, or any portion thereof, may be withheld from payment due or to become due the Contractor until such time as the Contractor shall furnish such additional security covering such claims as may be determined by the Owner.

F. All policies and certificates of insurance of the Contractor shall contain the following provisions:

1. Insurers shall have no right of recovery or subrogation against the Owner and its agents and agencies and the Engineer, it being the intention of the parties that the insurance policies so affected shall protect both parties and be primary coverage for any and all losses covered by the above-described insurance.

2. The insurance required of Contractor shall be primary and non-contributory to any other insurance which may be available as respects this Project.

3. The insurance companies issuing the policy or policies shall have no recourse against the Owner and its agents and agencies and the Engineer, for the payment of any premiums or for assessments under any form of policy.

4. Any and all deductibles in the above-described insurance policies shall be assumed by and be for the amount of, and at the sole risk of the Contractor.

G. Contractor shall add Owner, Engineer and Engineer's Subconsultants as additional insureds under all applicable policies or by contract of insurance called for in this Agreement, with exception of Workers' Compensation.

## ARTICLE 6.0 – CONTRACTOR'S RESPONSIBILITIES

### 6.1 Supervision and Superintendence

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction, but Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. Contractor shall be responsible to see that the completed Work complies accurately with the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent thereto who shall not be replaced without Written Notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or received from the superintendent shall be binding on Contractor.

### 6.2 Labor; Working Hours

A. Contractor shall provide competent, suitably qualified personnel to survey, lay out, and construct the Work as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular Working hours, and Contractor will not permit overtime Work or the performance of Work on Saturday, Sunday, or any legal holiday without a minimum 48 hour Written Notice to Engineer. Nothing contained herein shall be construed as a waiver of Contractor's duty to meet all Contract Times set forth in the Contract Documents.

### 6.3 Services, Materials, and Equipment

A. Unless otherwise as specified in the General Requirements, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, startup, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

#### 6.4 Progress Schedule

A. Contractor shall adhere to the progress schedule established in accordance with Article 2.7 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for Acceptance (to the extent indicated in Article 2.7) proposed adjustments in the progress schedule that will not result in changing the Contract times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of Article 12.0. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.0.

#### 6.5 Substitutes and "Or-Equals"

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item, equipment or material, or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. "Or-Equal" Items: If, in Engineer's sole discretion, an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item; in which case, review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For purposes of this Article 6.5, Paragraph A.1., a proposed item of material or equipment

will be considered functionally equal to an item so named if:

a. In the exercise of reasonable judgment Engineer determines that: (i) it is at least equal in quality durability, appearance, strength, and design characteristics; (ii) it will reliably perform at least equally well the function imposed by the design concept of the completed Project as a functioning whole, and;

b. Contractor certifies that: (i) there is no increase in cost to the Owner; and (ii) it will conform substantially, even with deviations, to the detailed requirements of the item named in the Contract Documents.

#### 2. Substitute Items:

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Article 6.5, Paragraph A.1., it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The procedure for review by Engineer will be as set forth in Article 6.5, Paragraph A.2.d., as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall first make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application shall certify that the proposed substitute item will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified, and be suited to the same use as that specified. The application will state the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time, whether or not use of a proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct Contract with Owner for Work on the Project) to adapt the design to the proposed substitute item and whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute item from that specified will be identified in the application, and available engineering, sales, maintenance, repair, and replacement services will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other Contractors

affected by any resulting change, all of which will be considered by Engineer in evaluating the proposed substitute item. Engineer may require Contractor to furnish additional data about the proposed substitute item.

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is shown or indicated in and expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by Engineer will be similar to that provided in Article 6.5, Paragraph A.2.d.

C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Article 6.5, Paragraph A. and Paragraph B. Engineer will be the sole judge of acceptability. No "or-equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved shop drawing for an "or equal". Engineer will advise Contractor in writing of any negative determination.

D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. Engineer's Cost Reimbursement: Engineer will record time required by Engineer and Engineer's Consultants in evaluating substitutes proposed or submitted by Contractor pursuant to Article 6.5, Paragraph A.2. and Paragraph B. and in making changes in the Contract Documents (or in the provisions of any other direct Contract with Owner for Work on the Project) occasioned thereby. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer and Engineer's Consultants for evaluating each such proposed substitute.

F. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

## 6.6 Concerning Subcontractors, Suppliers, and Others

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. Within ten days after Notice of Award has been issued, the Contractor shall furnish to the Engineer a list of Subcontractors, Suppliers, or other persons or organizations that will participate in the Work or furnish principal items of materials and equipment to be utilized in the Work. The list shall include the Subcontractors, Suppliers, or other persons or organizations indicated on the Bid form. Within ten days after receipt of the list but prior to the effective date of the Agreement, the Engineer shall notify the Contractor in writing if the Owner has reasonable objection to any Subcontractor, Supplier, or other person or organization on the list. Failure by the Owner to object to anyone on the list within the specified time shall constitute Acceptance of the Subcontractor, Supplier, or other person or organization. Acceptance of a Subcontractor, Supplier, other person or organization named shall not constitute a waiver of the requirements of the Contract Specifications or the right of the Owner or Engineer to reject defective Work.

If the Owner has a reasonable objection as described above, the Contractor may either (i) submit an acceptable substitute without an increase in his Bid price, or ii) withdraw his Bid without forfeiting his Bid security.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor shall it create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations. Owner or Engineer may furnish to any such Subcontractor, Supplier, or other individual or entity to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor, Supplier, or other individual or entity.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect Contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor shall be pursuant to an appropriate Agreement between the Contractor and Subcontractor. The Subcontractor shall not commence Work until the Contractor has obtained all insurance as required by Article 5.0, inclusive.

H. The Contractor shall not subcontract more than 50 percent of the Contract Price without prior written approval of the Owner.

#### 6.7 Patent Fees and Royalties

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Engineer, Engineer's Consultants, and the officers, directors, partners, employees or agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

#### 6.8 Permits

A. Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the effective date of the Agreement. Contractor shall pay all charges of utility Owners for connection to the Work.

#### 6.9 Laws and Regulations

A. Contractor shall give all notices and comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations,

neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any laws or regulations.

B. If Contractor observes that the Specifications or Drawings are at variance with any laws or regulations, he shall give Engineer prompt Written Notice thereof. If Contractor performs any Work knowing it to be contrary to such laws or regulations, and without such notice to Engineer, he shall bear all costs arising therefrom. The Contractor shall, at all times, observe and comply with and shall cause all his agents and employees and all his Subcontractors to observe and comply with all such existing and future laws or regulations, and shall protect and indemnify the Owner and the Engineer and the municipalities in which Work is being performed, and their officers and agents against any Claim or liability arising from or based on the violation of any such law or regulation, whether by himself or his employees or any of his Subcontractors.

C. Changes in laws or regulations not known at the time of opening of Bids (or, on the effective date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work may be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Article 10.5.

#### 6.10 Taxes

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. A listing of sales tax paid for the period shall be submitted with each progress payment.

#### 6.11 Use of Site and Other Areas

A. Limitation on Use of Site and Other Areas:

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of Workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any Claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the Claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Engineer, Engineer's Consultant, and the officers, directors, partners, employees, agents, and other consultants of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any Claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. Cleaning: Prior to substantial completion of the Work, Contractor shall clean the Site and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus material and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

#### 6.12 Record Documents

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner. Contractor is advised that failure to furnish the Engineer with accurate and detailed record drawings shall be reason for withholding final payment.

#### 6.13 Safety and Protection

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. All persons on the Site or who may be affected by the Work;

2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. Any property referred to in Article 6.13, Paragraph A.2. or A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor.

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

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Article 14.7, Paragraph B. that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

#### 6.14 Safety Representative

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

#### 6.15 Hazard Communication Programs

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with laws or regulations.



6.16 Emergencies

A. In the event of emergencies affecting the safety or protection of persons, the Work or property at the Site or adjacent thereto, Contractor shall act as necessary to prevent damage, injury, or loss. Contractor shall give Engineer prompt Written Notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 Shop Drawings and Samples

A. Contractor shall submit Shop Drawings to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Contractor shall submit four copies of all Shop Drawings plus the number required for use by the Contractor. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Article 6.17, Paragraph E.

B. Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers, and the use for which intended and otherwise as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Article 6.17, Paragraph E. Contractor shall submit three Samples plus the number required to be returned to the Contractor for each Sample required.

C. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submittals acceptable to Engineer as required by Article 2.7, any related Work performed prior to Engineer's review and approval of the pertinent Submittal will be at the sole expense and responsibility of Contractor.

D. Submittal Procedures:

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. All field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. All materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. All information relative to means, methods, techniques, sequences, and procedures of construction and safety precautions and programs incident thereto; and

d. Contractor shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

e. Each Shop Drawing submitted to the Engineer must be accompanied by a transmittal which references the applicable section(s) of the Specifications. In addition, each Shop Drawing shall be numbered in the order of submittal sequence. All submittals called for in the Specifications shall be submitted in the number of copies as follows.

2. Each submittal shall bear a stamp or specific written indication that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. At the time of each submittal, Contractor shall give Engineer specific Written Notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to Engineer for review and approval of each such variation.

E. Engineer's Review:

1. Engineer will timely review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals acceptable to Engineer. Engineer's review and approval will be only for the limited purpose of checking for conformance with the information contained in the Contract Documents and for compatibility with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval of Shop Drawings or Samples shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has in writing called Engineer's attention to each such variation at the time of each submittal as required by Article 6.17, Paragraph D.3., and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by Engineer relieve Contractor from responsibility for complying with the requirements of Article 6.17, Paragraph D.1.

F. Resubmittal Procedures: Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. Contractor shall direct specific attention in writing to revision other than the corrections called for by Engineer on previous submittals.

#### 6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Article 15.4 or as Owner and Contractor may otherwise agree in writing.

#### 6.19 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner, Engineer, and Engineer's Consultants that all Work will be in accordance with the Contract Documents and will not be defective. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. Abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
2. Normal wear and tear under normal usage.

B. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an Acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. Observations by Engineer;
2. Recommendation by Engineer or payment by Owner of any progress or final payment;
3. The issuance of a Certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. Use or occupancy of the Work or any part thereof by Owner;

5. Any Acceptance by Owner or any failure to do so;

6. Any review and approval of a shop drawing or sample submittal or the issuance of a notice of acceptability by Engineer;

7. Any inspection, test, or approval by others;

8. Any correction of defective Work by Owner, or

9. Any act by the Owner to suspend or terminate pursuant to Article 15.

#### 6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner, Engineer, Engineer's Consultants, and the officers, directors, partners, employees, agents, and other consultants and Subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court of arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, to the extent that any such Claim, cost, loss, or damage:

1. Is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom; and
2. Is proximately caused by any negligent act or omission, breach of contract or violation of Laws and Regulations of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of an individual or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such individual or entity.

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Article 6.20, Paragraph A. shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for

Contractor or any such Subcontractor, Supplier, or other individual or entity under Workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Article 6.20, Paragraph A. shall not extend to the liability of Engineer and Engineer's Consultants or to the officers, directors, partners, employees, agents, and other consultants and Subcontractors of each and any of them arising out of:

1. The preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. Giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

D. Nothing in the Contract Documents shall create or give to third parties any Claim or right of action against the Contractor, the Owner, or the Engineer beyond such as may legally exist irrespective of the Contract.

## ARTICLE 7.0 – OTHER WORK

### 7.1 Related Work at Site

A. Owner may perform other Work related to the Project at the Site by Owner's employees, or let other direct Contracts therefore, or have other Work performance by utility Owners. If such other Work is not noted in the Contract Documents, then:

1. Written notice thereof will be given to Contractor prior to starting any such other Work; and

2. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other Work, a Claim may be made therefor as provided in Article 10.5.

B. Contractor shall afford each other Contractor who is a party to such a direct Contract and each utility owner (and Owner, if Owner is performing the other Work with Owner's employees) proper and safe access to the Site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other Work and shall properly coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other Work. Contractor shall not endanger any Work of others by cutting, excavating, or otherwise altering their Work and will only cut or alter their Work with the written consent of Engineer and the others whose Work will be affected. The duties

and responsibility of Contractor under this Article are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon Work performed by others under this Article 7.0, Contractor shall inspect such other Work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other Work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an Acceptance of such other Work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other Work.

### 7.2 Coordination

A. If Owner intends to contract with others for the performance of other Work on the Project at the Site, the following will be set forth:

1. The individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. The specific matters to be covered by such authority and responsibility will be itemized; and

3. The extent of such authority and responsibilities will be provided.

B. Owner shall have sole authority and responsibility for such coordination.

## ARTICLE 8.0 – OWNER'S RESPONSIBILITIES

### 8.1 Communications to Contractor

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

### 8.2 Replacement of Engineer

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

### 8.3 Furnish Data

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

### 8.4 Pay Promptly When Due

A. Owner shall make payments to Contractor promptly when they are due as provided in Articles 14.2, Paragraph C. and 14.7, Paragraph C.

#### 8.5 Lands and Easements; Reports and Tests

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Articles 4.1 and 4.5. Article 4.2 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and Drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

#### 8.6 Insurance

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.0.

#### 8.7 Inspections, Tests, and Approvals

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Article 13.3.

#### 8.8 Limitations on Owner's Responsibilities

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

#### 8.9 Undisclosed Hazardous Environmental Condition

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Article 4.6.

#### 8.10 Evidence of Financial Arrangements

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in these General Conditions.

### **ARTICLE 9.0 – ENGINEER'S STATUS DURING CONSTRUCTION**

#### 9.1 Owner's Representative

A. Engineer will be Owner's representative during the construction period.

#### 9.2 Clarifications and Interpretations

A. The Engineer shall conduct on-site observations of the Work in progress to become generally familiar with the quality and progress of Work which has been completed, to determine in general if the Work actually observed is proceeding so as to indicate that, upon completion, will comply with the Contract Documents, and such Work whether tests, equipment, system start-ups, and operating and maintenance instructions are being prepared and performed as required by the Contract Documents. Engineer shall have the authority to disapprove or reject defective Work in accordance with Article 13.0.

#### 9.3 Authorized Variations in Work

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of a Field Order, a Claim may be made therefor as provided in Article 10.5.

#### 9.4 Rejecting Defective Work

A. Engineer will have authority to disapprove or reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work provided in Article 13.4, whether or not the Work is fabricated, installed, or completed.

#### 9.5 Shop Drawings, Change Orders and Payments

A. In connection with Engineer's authority as to Shop Drawings and Samples, see Article 6.17.

B. In connection with Engineer's authority as to Change Orders, see Articles 10.0, 11.0, and 12.0.

C. In connection with Engineer's authority as to applications for payment, see Article 14.0.

#### 9.6 Determinations for Unit Price Work

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters

before rendering a written decision thereon (by recommendation of an Partial Payment Estimate or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Article 10.5.

#### 9.7 Decisions on Requirements of Contract Documents and Acceptability of Work

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and initial decision maker as to the acceptability of the Work thereunder. Claims, disputes, and other matters relating to the acceptability of the Work, the quantities and classifications of Unit Price Work, the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, and claims seeking changes in the Contract Price or Contract Times, will be referred initially to Engineer in writing in accordance with the provisions of Article 10.5 with a request for a formal decision.

B. When functioning as interpreter or decision maker under this Article 9.7, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by Engineer pursuant to this Article 9.7 with respect to any such Claim, dispute, or other matter (except any which have been waived by the making or Acceptance of final payment as provided in Article 14.7) will be a condition precedent to any exercise by Owner or Contractor of such rights or remedies as either may otherwise have under the Contract Documents or by laws or regulations in respect of any such Claim, dispute, or other matter.

#### 9.8 Engineer's Project Representative

A. If Owner and Engineer shall agree, Engineer will furnish an Engineer's Project Representative to assist Engineer in providing more extensive observation of the Work. The responsibilities and authority and limitations thereon of any such Engineer's Project Representative and assistants will be as provided in the following Article 9.2.B and in Article 9.9. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in these General Conditions.

B. Except upon written instruction of the Engineer, the Engineer's Project Representative:

1. Shall not authorize any deviation from the Contract Documents or approve any substitute materials or equipment.

2. Shall not exceed the limitation of Engineer's authority as set forth in the Contract Documents.

3. Shall not undertake any of the responsibilities of Contractor, Subcontractors, or Contractor's superintendent, or expedite the Work.

4. Shall not advise on or issue directions relative to any aspect of the means, methods, techniques, sequences or procedures of construction unless such is specifically called for in the Contract Documents.

5. Shall not advise on or issue directions as to safety precautions and programs in connection with the Work.

#### 9.9 Limitations on Engineer's Authority and Responsibilities

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility, or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, contract, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Partial Payment Estimate and accompanying documentation and all maintenance and operating instruction, schedules, guarantees, Bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Article 14.7, Paragraph A. will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with, the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Article 9.9 shall also apply to Engineer's Consultants, Engineer's Project Representative, and assistants.

**ARTICLE 10.0 – CHANGES IN THE WORK;  
CLAIMS**

10.1 Authorized Changes in the Work

A. Without invalidating the Agreement and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document executed or issued pursuant to these provisions, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Article 10.5.

10.2 Unauthorized Change in the Work

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Article 3.4, except in the case of an emergency as provided in Article 6.16 or in the case of uncovering Work as provided in Article 13.4, Paragraph B.

10.3 Execution of Change Orders

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer (or Written Amendments) and agreed to by Owner and Contractor covering:

1. Changes in the Work which are:  
(i) ordered by Owner pursuant to Article 10.1, Paragraph A., (ii) required because of Acceptance of defective Work under Article 13.8, Paragraph A. or Owner's correction of defective Work under Article 13.9, or (iii) agreed to by the parties;

2. Changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. Changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Article 10.5; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such

appeal, Contractor shall carry on the Work and adhere to the progress schedule as provided in Article 6.18, Paragraph A.

B. The execution by the parties of a Change Order shall constitute a full and final resolution of all claims by Contractor, whether for money or time, including any schedule impacts, arising out of the matters set forth in the Change Orders.

10.4 Notification to Surety

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable Bond will be adjusted to reflect the effect of any such change.

10.5 Claims and Disputes

A. Notice: Written notice stating the general nature of each Claim, dispute, or other matter shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event-giving rise thereto. Notice of the amount or extent of the Claim, dispute, or other matter with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim, dispute, or other matter). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Article 12.1, Paragraph B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Article 12.2, Paragraph B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the Claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

B. Engineer's Decision: Engineer will render a formal decision in writing within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any. Engineer's written decision on such Claim, dispute, or other matter will be final and binding upon Owner and Contractor unless:

1. An appeal from Engineer's decision is taken within the time limits and in accordance with the dispute resolution procedures set forth in Article 16.0; or

2. If no such dispute resolution procedures have been set forth in Article 16, a Written Notice of intention to appeal from Engineer's written decision is delivered by Owner or Contractor to the other

and to Engineer within 30 days after the date of such decision, and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction within 60 days after the date of such decision or within 60 days after Substantial Completion, which ever is later (unless otherwise agreed in writing by Owner and Contractor), to exercise such rights or remedies as the appealing party may have with respect to such Claim, dispute, or other matter in accordance with applicable Laws and Regulations.

C. If Engineer does not render a formal decision in writing within the time stated in Article 10.5, Paragraph B., a decision denying the Claim in its entirety shall be deemed to have been issued 31 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any.

D. No Claim for an adjustment in Contract Price or Contract Times (or Milestones) will be valid if not submitted in accordance with this Article 10.5.

#### **ARTICLE 11.0 – COST OF THE WORK; CASH ALLOWANCES; UNIT PRICE WORK**

##### **11.1 Cost of the Work**

A. **Costs Included:** The term Cost of the Work means the sum of all costs necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in the amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Article 11.1, Paragraph B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include without limitation superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, worker's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular Working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and

Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors and all subcontracts shall be subject to the provisions of the Contract Documents.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the Owners, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, whether rented from Contractor or others, shall be negotiated between the Engineer and the Contractor. These rates shall include all fuel, lubricants, insurance, etc. Equipment rental charges shall not exceed the prorated monthly rental rates listed in the current edition of the "Compilation of Rental Rates for Construction Equipment," as published by the Associated Equipment Distributors. Charges per hour shall be determined by dividing the monthly rates by 176. The rental of any such equipment and machinery shall close when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work and for which Contractor is liable imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work

(except losses and damages with the deductible amounts of property insurance established in accordance with Article 5.6.4), provided such losses and damages have resulted from causes other than the negligence of Contractor, and any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expressage, and similar petty cash items in connection with the Work.

i. When the Cost of the Work is used to determine the value of a Change Order or of a Claim, the cost of premiums for additional Bonds and insurance required because of the changes in the Work or caused by the event giving rise to the Claim.

j. When all the Work is performed on the basis of cost-plus, the costs of premiums for all Bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, Engineers, architects, estimators, attorney, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Article 11.1, Paragraph A.1. or specifically covered by Article 11.1, Paragraph A.4., all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or

equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Article 11.1, Paragraph A. and 11.1, Paragraph B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Article 12.1, Paragraph C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Articles 11.1, Paragraph A. and Paragraph B., Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

## 11.2 Cash Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sum as may be acceptable to Owner and Engineer. Contractor agrees that:

1. The allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes, and

2. Contractor's costs for unloading and handling on the Site, labor, installation costs, overhead, profit, and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

B. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

## 11.3 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and



classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Article 9.6.

B. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

C. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Article 10.5 if:

1. The quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. There is no corresponding adjustment with respect to any other item of Work; and

3. If Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

#### **ARTICLE 12.0 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES**

##### 12.1 Change of Contract Price

A. The Contract Price may be changed only by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Price shall be based on Written Notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with provisions of Article 10.5.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit price to the quantities of the items involved (subject to the provisions of Article 11.2); or

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Article 12.1, Paragraph C.2.); or

3. Where the Work involved is not covered by unit prices contained in the Contract Documents and Agreement to a lump sum is not reached under Article 12.1, Paragraph B.2., on the basis of the Cost of the Work (determined as provided in Article 11.1) plus a Contractor's

fee for overhead and profit (determined as provided in Article 12.1, Paragraph C.).

C. Contractor's Fee: The Contractor's fee for overhead and profit shall be determined as follows:

1. A mutually acceptable fixed fee; or

2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. For costs incurred under Articles 11.1, Paragraph A.1. and Paragraph A.2., the Contractor's fee shall be 15 percent;

b. For costs incurred under Article 11.1, Paragraph A.3., the Contractor's fee shall be five percent;

c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Article 12.1, Paragraph C.2.a. is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Article 11.1, Paragraphs A.1. and A.2., and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. No fee shall be payable on the basis of costs itemized under Article 11.1, Paragraph A.4. and A.5., and Article 11.1, Paragraph B.;

e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. When both additions and credit are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Articles 12.1, Paragraph C.2.a. through Paragraph C.2.e., inclusive.

##### 12.2 Change of Contract Times

A. The Contract Times (or Milestones) may only be changed by a Change Order or by a Written Amendment. Any Claim for an adjustment in the Contract Times (or Milestones) shall be based on Written Notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Article 10.5.

B. Any adjustment of the Contract Times (or Milestones) covered by a Change Order or of any Claim for an adjustment in the Contract Times (or Milestones) will be

determined in accordance with the provisions of this Article 12.0.

### 12.3 Delays Beyond Contractor's Control

A. Where Contractor is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of Contractor, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Article 12.2, Paragraph A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other Contractors performing the Work as contemplated by Article 7.0, fires, floods, epidemics, abnormal weather conditions, or acts of God.

### 12.4 Delays Within Contractor's Control

A. The Contract Times (or Milestones) will not be extended due to delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

### 12.5 Delays Beyond Owner's and Contractor's Control

A. Where Contractor is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both Owner and Contractor, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be Contractor's sole and exclusive remedy for such delay.

### 12.6 Delay Damages

A. In no event shall Owner or Engineer be liable to Contractor, any Subcontractor, any Supplier, or any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from:

1. Delays caused by or within the control of Contractor; or
2. Delays beyond the control of both Owner and Contractor including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God, or acts or neglect by utility owners or other Contractors performing other Work as contemplated by Article 7.0.

B. Nothing in this Article 12.6 bars a change in Contract Price pursuant to this Article 12.0 to compensate Contractor due to delay, interference, or disruption directly attributable to actions or inactions of Owner or anyone for whom Owner is responsible.

### 12.7 Abnormal Weather Conditions

A. Abnormal weather conditions for rain shall be derived from the most recent 20-year (minimum) average for the nearest NOAA weather reporting station. The mean number of days of precipitation per month of 0.10 inch or more shall establish the mean number of weather days for the period. When the actual number of calendar days the Contractor could not work due to abnormal weather conditions exceeds the monthly mean as determined above, the Contract shall be extended the number of days in excess of the monthly mean for each month during the Contract period. A Working day is a day when the Contractor or his Subcontractors could work for more than four hours. If the actual number of calendar days the Contractor could not work due to abnormal weather conditions is less than the monthly mean, then the number of days the Contract was extended shall be reduced for the Contract period. At the end of the Contract period the total Contract Time will be the total adjusted. Should the total days the Contractor cannot work due to abnormal weather conditions be less than the mean for the Contract period, no time will be deleted from the Contract. The time extension awarded to the Contractor shall be for time only. No increase in Contract Price will be considered.

### 12.8 Liquidated Damages

A. The required completion times for the Project are as set forth in the Contract Documents. The Contractor is advised that the Contract Times stated in the Contract Documents are of the essence of the Contract. For each and every day in excess of each Contract Time stated in the Contract Documents that the Contractor fails to complete the Work indicated, the Contractor shall pay to the Owner the sum stated in the Contract Documents as Liquidated Damages.

## **ARTICLE 13.0 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### 13.1 Notice of Defects

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.0.

### 13.2 Access to Work

A. Owner, Engineer, Engineer's Consultants, other representative and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interest will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

### 13.3 Tests and Inspections

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Contractor shall employ and pay for the services of an independent firm to perform testing and inspection as required by the Contract Documents.

C. The Owner reserves the right to independently perform at its own expense, laboratory tests on random Samples of material or performance tests on equipment delivered to the Site. These tests, if made, will be conducted in accordance with the appropriate referenced standards or specification requirements. The entire shipment represented by a given sample, Samples, or price of equipment may be rejected on the basis of the failure of Samples or pieces of equipment to meet specified test requirements. All rejected materials or equipment shall be removed from the Site, whether stored or installed in the Work, and the required replacement shall be made, all at no additional cost to the Owner.

D. If any Work (or the Work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

E. Uncovering Work as provided in Article 13.3, Paragraph D., shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

### 13.4 Uncovering Work

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

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment. If it is found that such Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of Work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to

agree as to the amount thereof, Owner may make a Claim therefor as provided in Article 10.5. If, however, such Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Article 10.5.

### 13.5 Owner May Stop the Work

A. If the Work is defective, or Contractor fails to supply sufficient skilled Workmen or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, or if the Work interferes with the operation of the existing facility, the Owner may order Contractor to stop, by a written order any Work, or any portion thereof, until the cause for such order has been eliminated.

### 13.6 Correction or Removal of Defective Work

A. Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of Work of others).

### 13.7 Correction Period

A. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Article 6.11, Paragraph A., is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instruction: (i) repair such defective land or areas, or (ii) correct such defective Work or, if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and (iii) satisfactorily correct or repair or remove and replace any damage to other Work, to the Work of others or other land or areas resulting therefrom. If Contractor does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced, and all claims, costs, losses, and damages

(including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of Work of others) will be paid by Contractor.

B. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

C. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Article 13.7, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

D. Contractor's obligations under this Article 13.7 are in addition to any other obligation or warranty provided in the Contract Documents, at law, or in equity. The provisions of this Article 13.7 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

#### 13.8 Acceptance of Defective Work

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such Acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Article 10.5. If the Acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

#### 13.9 Owner May Correct Defective Work

A. If Contractor fails within a reasonable time after Written Notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Article 13.6,

Paragraph A., or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days Written Notice to Contractor, correct and remedy any such deficiency.

B. In exercising the rights and remedies under this Article, Owner shall proceed expeditiously. In connection with such corrective and remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents, and employees, Owner's other contractors and Engineer and Engineer's Consultants access to the Site to enable Owner to exercise the rights and remedies under this Article.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Article 13.9 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of Work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Article 13.9.

### ARTICLE 14.0 – PAYMENTS TO CONTRACTOR AND COMPLETION

#### 14.1 Schedule of Values

A. The schedule of values established as provided in Article 2.7, Paragraph A. will serve as the basis for progress payments and will be incorporated into a form of a Partial Payment Estimate acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

B. With the schedule of values, the Contractor shall submit for the Engineer's approval, a complete breakdown of all lump sum items in the Bid form. This breakdown, modified where directed by the Engineer, will be used as a basis for preparing partial estimates and establishing progress payments.

C. A lump sum payment not to exceed three percent of the total Bid price (to include all Bonds, insurance, move-on expenses, etc.) will be allowed for 'mobilization' as a progress payment line item. Up to half of the cost for mobilization will be considered in the initial payment request provided that cost documentation suitable to the Engineer is furnished by the Contractor. Any outstanding balance of a mobilization line item will be payable when the Project Work is ten percent complete as indicated by the approved progress payments.

#### 14.2 Progress Payments

##### A. Requests for Payments:

1. All requests for payment shall have an effective ending date of 25<sup>th</sup> day of each month and shall be submitted on Form EJCDC – C620 – 2013 Contractors Application for Payment and will be computer generated by Engineer based on Contractor's quantities. All requests for payment will be based on the schedule of values as provided in Article 14.1, and submitted electronically.

2. Prior to final preparation of each progress payment, the Contractor and Engineer shall mutually measure and agree upon the quality and quantity of Work completed each period.

3. Partial payment for materials or equipment properly stored on-Site will be made on basis of the invoice cost of materials or equipment, provided a detailed list of the materials for which partial payment is requested and supporting copies of the invoices are attached to each Partial Payment Estimate. The submitted list of stored materials will be on a form furnished in the Contract Documents or on a form agreed upon by Contractor and Engineer. As Work progresses, the value of stored materials will be reduced as materials or equipment are placed in construction. At completion of the Work, the value of stored materials not utilized in the Work must be zero.

4. Retainage: For public construction contracts in which the total Project costs are less than \$100,000, there shall be no retainage on periodic or final payment made by the Owner. Retainage on periodic or final payments on public construction contracts equal to or greater than \$100,000 is allowed as follows:

a. The Owner may retain up to 3.5 percent of any periodic payment due Contractor.

b. A Project shall be deemed 50 percent complete when the Contractor's gross Project invoices, excluding the value of materials stored off Site, equal or exceed 50 percent of the value of the Contract; except, the value of materials stored on Site shall not exceed 20 percent of the Contractor's gross Project invoices for the purpose of determining whether the Project

is 50 percent complete. Upon 50 percent completion, with written consent of the surety, the Owner at its election may cease to retain any further retainage from periodic payments due the Contractor if any non-conforming Work identified in writing prior to that time by the Engineer and/or Owner has been corrected by the Contractor and accepted by the Engineer and/or Owner and the Contractor continues to perform satisfactorily. If, after retainage has ceased, the Owner determines Contractor's performance is unsatisfactory, the Owner may reinstate retainage for each subsequent periodic payment up to the maximum amount of 5 percent.

##### B. Review of Requests for Payment:

1. Engineer will, within 10 days after receipt of each Partial Payment Estimate, either indicate in writing its approval of payment and present the request to Owner or return the request to the Contractor indicating in writing the reasons for refusing to approve payment. In the latter case, Contractor may make the necessary correction and resubmit the request for payment. Within 30 days of receiving the submittal of an approved Partial Payment Estimate, the Owner subject to Article 14.2, Paragraph D, will make partial payment to the Contractor on the basis of a duly certified approved estimate of the Work performed during the specified period by the Contractor.

2. Engineer's recommendation of any payment requested in a Partial Payment Estimate will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Partial Payment Estimate and the accompanying data and schedules, that to the best of Engineer's knowledge, information, and belief:

a. The Work has progressed to the point indicated;

b. The quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Article 9.8, and to any other qualifications stated in the recommendation); and

c. Conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment, Engineer will not thereby be deemed to have represented that: (i) inspections made to check the quality or the quantity of the Work have been exhausted, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or (ii) that there may not be other matters or

issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

a. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer to supervise, direct, or control the Work or for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work. Additionally, said review or recommendation will not impose responsibility on Engineer to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

4. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner referred to in Article 14.2, Paragraph B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

a. The Work is defective, or completed Work has been damaged, requiring correction or replacement;

b. The Contract Price has been reduced by Written Amendment or Change Orders;

c. Owner has been required to correct defective Work or complete Work in accordance with Article 13.9; or

d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Article 15.2, Paragraph A.

C. Payment Becomes Due: Thirty days after presentation of the Partial Payment Estimate to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Article 14.2, Paragraph D.) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

a. Claims have been made against Owner on account of Contractor's performance or furnishing of the Work;

b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;

c. There are other items entitling Owner to a set-off against the amount recommended; or

d. Owner has actual knowledge of the occurrence of any events as enumerated in Article 15.2, Paragraph A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner must give Contractor immediate Written Notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Article 14.2, Paragraph C.

14.3 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Partial Payment Estimate, whether incorporation in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.4 Substantial Completion

A. Contractor may, in writing to Owner and Engineer, certify that the entire Project is substantially complete and request that Engineer issue a Certificate of Substantial Completion. Within a reasonable time thereafter Owner, Contractor, and Engineer shall make an inspection of the Project to determine the status of completion. If Engineer and Owner do not consider the Project substantially complete, Engineer shall prepare a list of items to be completed or corrected before Substantial Completion, and shall fix the time within which such items shall be completed or corrected, said time to be within the Contract Time.

B. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion, but Owner shall allow Contractor reasonable access to complete or correct items on the tentative list.

#### 14.5 Partial Utilization

A. Prior to Substantial Completion of the Project, Owner may in writing request Contractor to permit use of a specified part of the Project which Owner believes may be used without significant interference with construction of the other parts of the Project. If Contractor agrees, he will certify to Owner and Engineer that said part of the Project is substantially complete and request the Engineer to issue a Certificate of Substantial Completion for that part of the Project. Within a reasonable time thereafter Owner, Contractor, and Engineer shall make an inspection of that part of the Project to determine its status of completion. If Engineer and Owner do not consider that it is substantially complete, Engineer will notify Contractor in writing giving reasons therefore. If Engineer and Owner consider that part of the Project to be substantially complete, Engineer will execute and deliver to Owner and Contractor a certificate to that effect fixing the date of Substantial Completion as to that part of the Project.

B. The Contractor is specifically advised that payment in full for sections so completed and used by the Owner will NOT be made until the entire Project has been completed. Partial payments for Work completed and the retainage will be handled on the basis of the ENTIRE Contract amount as herein specified. The Contractor shall account for this in its Bid and under no circumstances will occupancy and use of completed sections of the Work by the Owner be considered as grounds for reducing the retainage withheld from the Contractor's partial payments, or for an increase in the Contract Price.

#### 14.6 Final Inspection

A. Upon Written Notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measure as are necessary to complete such Work or remedy such deficiencies.

#### 14.7 Final Payment

##### A. Requests for Payment:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Article 6.12), and other documents, Contractor may make request for final payment following the procedure for progress payments.

2. The final Partial Payment Estimate shall be accompanied (except as previously delivered) by:  
(i) all documentation called for in the Contract Documents,

including but not limited to the evidence of insurance required by Article 5.2; (ii) consent of the surety, if any, to final payment; and (iii) complete and legally effective releases or waivers (satisfactory to Owner) of all lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Article 14.7, Paragraph A.2. and as approved by Owner, Contractor may furnish receipts or releases in full from all Subcontractors and Suppliers and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any lien.

B. Review of Payment Request and Acceptance: If, on the basis of Engineer's observation of the Work during construction and final inspection and Engineer's review of the final Partial Payment Estimate and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Partial Payment Estimate, indicate in writing Engineer's recommendation of payment and present the Partial Payment Estimate to Owner for payment. At the same time Engineer will also give Written Notice to Owner and Contractor that the Work is acceptable subject to the provisions of Article 14.9. Otherwise, Engineer will return the Partial Payment Estimate to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Partial Payment Estimate.

C. Payment Becomes Due: On all public construction contracts, the balance due a Contractor shall be paid in full within 45 days after any respective Contract for the Project has been accepted by the Owner, certified by the Engineer to be completed in accordance with terms of the plans and Specifications, or occupied by the Owner and used for the purpose for which the Project was constructed, whichever occurs first. However, when the Engineer in charge of the Project determines that a delay in completion of the Project in accordance with terms of the plans and Specifications is the fault of the Contractor, the Project may be occupied and used for the purposes for which it was constructed without payment of any interest on amounts withheld past the 45-day limit.

#### 14.8 Final Completion Delayed

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Partial Payment Estimate and

recommendation of Engineer, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in Article 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully complete and accepted shall be submitted by Contractor to Engineer with the request for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

#### 14.9 Waiver of Claims

A. The making and Acceptance of final payment will constitute:

1. A waiver of all claims by Owner against Contractor, except claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Article 14.6, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. A waiver of all claims by Contractor against Owner other than those previously made in writing which are still unsettled.

### ARTICLE 15.0 – SUSPENSION OF WORK AND TERMINATION

#### 15.1 Owner May Suspend Work

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Article 10.5.

#### 15.2 Owner May Terminate for Cause

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled Workers or suitable materials or equipment or failure to adhere to the progress schedule established under Article 2.7 as adjusted from time to time pursuant to Article 6.4);

2. Contractor's disregard of laws or regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Article 15.2, Paragraph A. occur, Owner may, after giving Contractor (and the surety, if any) seven days Written Notice, terminate the services of Contractor, exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion), incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and finish the Work as Owner may deem expedient. In such case, Contractor shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Article Owner shall not be required to obtain the lowest price for the Work performed. Owner's exercise of the option to substitute another person or entity to furnish services shall not relieve Contractor of any liability for Work performed prior to such substitution or any other obligations under this Agreement, all of which shall survive termination. Termination shall not preclude Owner's exercise of all remedies available under this Agreement, at law, or in equity, and such remedies shall be deemed cumulative, and not exclusive.

#### 15.3 Owner May Terminate For Convenience

A. Upon seven days Written Notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, elect to terminate the Contract. In such case, Contractor shall be paid (without duplication of any items):

1. For completed and accepted Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. For expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the



Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

C. Owner's termination for convenience shall not release or relieve Contractor from its obligations set forth in this Agreement, including without limitation, obligations for Work performed prior to such termination.

#### 15.4 Contractor May Stop Work or Terminate

A. If, through no act or fault of Contractor, the Work is suspended for more than 90 consecutive days by Owner or under an order of a court or other public authority, or Engineer fails to act on any Partial Payment Estimate within 30 days after it is submitted, or Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days Written Notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Article 15.3. In lieu of terminating the Contract and without prejudice to any other right remedy, if Engineer has failed to act on a Partial Payment Estimate within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after Written Notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Article 15.4 are not intended to preclude Contractor from making a Claim under Article 10.5 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Article.

#### 15.5 Assignment of Contract

A. Contractor shall not assign, transfer, convey or otherwise dispose of the Contract, or of its legal right, title, or interest in or to the same or to any part thereof, without the prior written consent of the Owner. Contractor shall not assign by power of attorney or otherwise any monies due and payable under this Contract without the prior written consent of the Owner. Such consent, if given, will in no way relieve the Contractor from any of the obligations of this Contract. Owner shall not be bound to abide by or observe the requirements of any such assignment, absent Owner's written consent as set forth herein.

## ARTICLE 16.0 – DISPUTE RESOLUTION

### 16.1 Methods and Procedures

A. Dispute resolution methods and procedures, if any, shall be as set forth in these General Conditions. If no method and procedure has been set forth, and subject to the provisions of Article 9.9 and 10.5, Owner and Contractor may exercise such rights or remedies as either may otherwise have under the Contract Documents or by laws or regulations in respect of any dispute.

B. Should Owner and Contractor agree, they may submit any and all unsettled claims or counterclaims, disputes, or other matters in questions between them arising out of or relating to the Contract Documents or the breach thereof to non-binding mediation by the American Arbitration Association before having recourse to a judicial forum.

## ARTICLE 17.0 – MISCELLANEOUS

### 17.1 Giving Notice

A. Whenever any provision of the Contract Documents requires the giving of Written Notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

### 17.2 Computation of Times

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

### 17.3 Cumulative Remedies

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by laws or regulations, by special warranty or guarantee, or by other provisions of the Contract Documents, and the provisions of this Article will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

### 17.4 Survival of Obligations

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all

continuing obligations indicated in the Contract Documents, will survive final payment, completion, and Acceptance of the Work or termination or completion of the Agreement.

17.5 Controlling Law

A. This Contract is to be governed by the law of the state in which the Project is located.

**ARTICLE 18.0 – DISCRIMINATION**

18.1 Discrimination Prohibited

A. During the performance of this Contract, the Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, sex, or national origin, except where religion, sex, or national origin is a bona fide occupational qualification reasonably necessary to the normal operation of the Contractor and agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of the non-discrimination clause; and (i) will state that such Contractor is an equal opportunity employer in all solicitations or advertisements for employees placed by or on behalf of the Contractor; and (ii) agrees that notices, advertisements, and solicitations placed in accordance with federal law, rule, or regulation shall be deemed sufficient for the purpose of meeting the requirements of this Article.

B. The Contractor will include these non-discrimination provisions in every subcontract or purchase order in excess of \$10,000 so that the provisions will be binding upon each Subcontractor or vendor.

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DOCUMENT 00 73 14  
SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions, which are defined in the Standard General Conditions of the Construction Contract, have the meanings assigned to them in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings indicated below which are applicable to both the singular and plural thereof.

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DOCUMENT 00 80 00  
SPECIAL PROVISIONS

1. CONSTRUCTION SAFETY

In order to protect the lives and health of his employees under the contract, the Contractor shall comply with all pertinent provisions of the Contract Work Hours and Safety Standards Act, as amended. This Act is commonly known as the Construction Safety Act and pertains to health and safety standards. The Contractor shall also maintain an accurate record of all cases of death, occupational disease, and injury requiring medical attention or causing loss of time from Work, arising out of and in the course of employment on Work under the contract.

The Contractor alone shall be responsible for the safety, efficiency, and adequacy of his construction products, appliances, and methods and for any damage that may result from their failure or their improper construction, maintenance, or operation.

2. BUILDER'S RISK

The Contractor shall assume entire responsibility for all work, materials, and equipment provided by him until final completion and acceptance of the project, and he shall be held responsible and liable for their safety in the amount paid to him by the Owner on account thereof.

3. PUBLIC TRAFFIC

The Contractor shall maintain, in a safe and practical way, the roadways that are now used by the public or individuals that neither may be unnecessarily delayed or inconvenienced on account of the work being carried on by the Contractor. The Contractor will be responsible for all injuries and damages to persons or property incurred by such person or persons, firm, or corporation on account of the acts or claims of negligence by the Contractor to the aforesaid while passing over the public or private roadways. The Contractor will be required to repair or make reparation for any damages that he may have caused to the roadways, public or private, immediately after discontinuing traffic along such route or when authorized to do so by the South Carolina Department of Transportation.

4. BARRICADES AND LIGHTS

Travel upon streets, commercial driveway, or residential driveway shall not be inconvenienced needlessly.

Whenever a street is closed, the Contractor shall cause plainly worded signs, announcing such fact, to be placed with proper barricades at the nearest cross street upon each side of obstruction and upon intersecting streets.

The Contractor shall maintain sufficient warning lights during the hours of darkness in and about the work which is underway, and it is his responsibility to see that such lights are lit and kept lit from sunset to sunrise.

The Contractor shall also provide and maintain suitable detour signs so as to warn the public of work underway and to guide them around the work in progress where it would be dangerous for them to proceed through the work area.

5. UNDERGROUND UTILITIES

All underground utilities may not be shown on the plans relative to type and/or location. The Contractor shall be responsible for locating all existing utilities prior to excavation. The Contractor shall have all utilities located at least one week prior to the planned date for excavating in the areas of interest. The Contractor shall immediately inform the Owner of unforeseen problems related to the types and/or locations of underground utilities and shall allow for a minimum of seven days for the Owner or Owner Representative to revise plans in the event revisions are necessary based on underground utility findings. All costs for temporarily or permanently relocating overhead or underground utilities shall be paid for by the Contractor.

6. SCDOT SPECIAL PROVISIONS

Contractor shall be solely responsible for coordinating with SCDOT, providing any necessary design, applications, and fees, and obtaining all required SCDOT permits to access Oconee Joint Regional Sewer Authority easements. All work in the SCDOT right-of-way is subject to the provisions of the contractor acquired SCDOT Encroachment Agreement(s) and shall be in compliance with the SCDOT "Standard Specifications for Highway Construction", 2007, or Current Issue. Where SCDOT document requirements differ from these Specifications, the more stringent requirements shall govern.

7. EROSION & SEDIMENT CONTROL

Contractor shall be responsible for design of the Erosion and Sediment Control Plan and Stormwater Pollution Prevention Plan (SWPPP) with South Carolina Department of Health and Environmental Control (SCDHEC) and applicable local municipality to obtain, any necessary, land disturbance permits, or construction permits. Contractor shall also apply and pay all application and permit fees, acquire, and maintain all applicable stormwater and land disturbance permits.

8. CHANNEL DIVERSION & CROSSING

For repairs requiring cofferdams, or equivalent diversion method, shall install and perform repairs during dry weather creek and/or stream flow conditions. Contractor shall be responsible for determining normal dry weather flow conditions and will not perform diversion or other construction activities within seventy-two (72) hours of a recorded rainfall in the vicinity of the diversion and repair location.

Contractor may encounter small creek/stream/channel crossings and drainage pipes crossing the OJRSA easements. Contractor shall be responsible for crossing the creeks without blocking normal creek or drainage flow. Contractor shall protect any drainage pipe or other structure from damage during construction activities and solely responsible for any damage. Contractor shall restore the area to the same grade and same condition, and stabilize any impacted areas"

Temporary channel crossings will be paid as needed. Contractor to coordinate and get approval from OJRSA and Engineer prior to constructing one.

9. SCDOT BRIDGE CROSSING

For point repair MH 53 – MH 52, contractor will use the existing OJRSA maintenance road and traverse under the SCDOT bridge (Sandifer Blvd., US 76 E) to access the repair location. Contractor will use the existing OJRSA maintenance road and traverse under the SCDOT bridge (Sandifer Blvd., US 76 E) to access the repair location. Contractor shall be responsible for determining the clearances from the bottom of the bridge to the ground in coordination with SCDOT and determining what equipment and materials can safely traverse under the bridge without damage to SCDOT or surrounding property. Contractor shall be solely responsible for any damage with no additional expense to the owner. If determined the SCDOT clearances are not suitable to traverse required equipment and materials, contractor shall notify the owner to coordinate alternative access routes.

10. OWNER BYPASS OPTION

If the Owner exercises the deductive alternative for bypass pumping alternatives from the Contract, Contractor shall coordinate with Owner regarding mobilization, setup of bypass system, and any necessary bypass system or configuration to complete work and testing. Contractor shall be notified by the Owner seven (7) calendar days prior to any construction, excavation or plugging activities. Contractor shall be responsible for immediately notifying the Owner of any equipment issues or flow capacity concerns during construction. If the Owner decides to exercise any deductive bypass pumping alternatives, Owner shall be responsible for the operation and maintenance of the equipment.

11. CLEANING AND CCTV INSPECTION

OJRSA (owner) will be providing cleaning, pre and post CCTV inspection services from a third party. Contractor must notify owner 10 days prior to construction activities for pre-construction cleaning and inspection and notify the owner after installation of the repair for post construction inspection. Owner will have 15 business days to perform the inspection and notify the contractor of any necessary corrective actions for acceptance unless weather conditions do not permit. Any additional CCTV inspections due to confirm defective or unacceptable is corrected will be the responsibility of contractor.

12. CONSTRUCTION ADMINISTRATION

The plans have been prepared for the owner by engineer for corrective maintenance. The owner is solely responsible for administration of the contract, observance of work and confirmation of proper installation. Engineer cannot and shall not be responsible for verification of work performed and shall not be held responsible for work performed or conditions to perform work.



DOCUMENT 00 91 13  
ADDENDUM

Oconee Joint Regional Sewer Authority  
Work Plan (2022) Corrective Repairs  
WKD Project Number 20230009.00.GV

ADDENDUM NUMBER [\_\_\_\_\_]

[Date Prepared]

BID DATE: [\_\_\_\_\_, \_\_\_\_] [a.m.] [p.m.]

TO ALL BIDDERS:

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated [\_\_\_\_  
\_\_\_\_\_] and all previous Addenda.

Acknowledge receipt of this Addendum in the space provided in the Bid Form. Failure to do so may disqualify the Bidder.

Below are changes, additions, and/or clarifications to the bid documents for this project.

**Specifications**

Item 1: [Document Title]

Item 2: [Document Title]

Item 3: [Document Title]

Item 4: [Document Title]

## **Drawings**

Item 5: [Document Title]

Item 6: [Document Title]

## **Clarifications**

Item 7: [Document Title]

Item 8: [Document Title]

Item 9: [Document Title]

Item 9: [Document Title]

Receipt of this addendum must be acknowledged on Page 00 41 43-1 of your Bid Form.

Sincerely,

**W. K. Dickson & Co., Inc.**  
SC Certificate of Authorization No. C00177

**SEAL**

Joseph F. Swaim, P.E.  
Project Manager

JFS/aeh

Enclosures [If applicable]

**Change Order No.** \_\_\_\_\_

Date of Issuance:	Effective Date:
Owner: Oconee Joint Regional Sewer Authority	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer: W.K. Dickson & Co., Inc.	Engineer's Project No.: 20230009.00.GV
Project: Work Plan (2022) Corrective Repairs	Contract Name:

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ___ to No. ___: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____ Engineer (if required)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Title: \_\_\_\_\_

SECTION 01 11 00  
SUMMARY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Contract description.
2. Specification Conventions.
3. Owner supplied products.

1.2 CONTRACT DESCRIPTION

A. Work of the Project includes all work as shown in the design plans prepared by W.K. Dickson & Co., Inc., entitled "TO #09 Corrective Repairs for Oconee Joint Regional Sewer Authority", Replacement of approximately 333 linear feet of 15-inch gravity sewer by open cut installation and multiple point repairs, associated stream crossing, bypass pumping, soil stabilization, dewatering and site restoration as indicated on the plans

B. Perform Work of Contract under unit prices contract with Owner in accordance with Conditions of Contract.

1.3 SPECIFICATION CONVENTIONS

A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

1.4 OWNER SUPPLIED PRODUCTS

A. Owner's Responsibilities:

1. Arrange for and deliver Owner-reviewed shop drawings, product data, and samples to Contractor.
2. Arrange and pay for delivery to site.
3. On delivery, inspect products jointly with Contractor.
4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:

1. Review Owner-reviewed shop drawings, product data, and samples.
2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
3. Handle, store, install, and finish products.
4. Repair or replace items damaged after receipt.

C. Items furnished by Owner for installation by Contractor:

1. C900 PVC Pipe (All required sizes for all the point repairs and replacement that are part of this project)

## 1.5 CONTRACTOR'S USE OF SITE AND PREMISES

### A. Work Hour Restrictions:

1. The work to be performed under this contract will occur in residential, commercial and agricultural areas of Oconee Joint Regional Area. The work may have significant impact on the access to the private properties. Therefore, the performance of the work will be permitted only during certain hours of the day, as describe by the following:
  - a. Work in Oconee county's right-of-way shall be performed in conformance with the encroachment permit.
  - b. Work in SCDOT's right-of-way shall be performed in conformance with the encroached permit.
  - c. Work in all other areas shall be performed between the hours of 7:00 AM and 6:00 PM, Monday through Friday, except for holidays.
  - d. Work on weekends or other than normal working hours may be permitted if so required by the Contractor and approved in writing at least 7 days prior to any proposed off-hours work.

## 1.6 WORK SEQUENCE

- A. Construct Work in stages during construction period, coordinate construction schedule and operations with Owner:

## 1.7 OWNER OCCUPANCY

- A. The Owner reserves the right to occupy the site during the entire period of construction for purposes including, but not limited to, maintenance and normal operation of the active wastewater collection system.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations as necessary.
- C. Schedule the Work to accommodate Owner occupancy.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 20 00  
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Schedule of values.
- B. Applications for payment.
- C. Change procedures.
- D. Defect assessment.
- E. Unit prices.
- F. Alternates.
- G. Cash allowances.
- H. Contingency allowances.
- I. Testing and inspection allowances.

1.2 SCHEDULE OF VALUES

- A. Submit printed schedule on EJCDC C-620 Contractor's Application for Payment (2018). Electronic format will be provided by the Owner.
- B. Submit Schedule of Values in duplicate within 15 days after date established in Notice to Proceed.
- C. Format: Utilize Table of Contents of this Project Manual. Identify each line item with number and title of major specification Section. Identify site mobilization, bonds and insurance.
- D. Include in each line item, amount of Allowances specified in this Section. For unit cost allowances, identify quantities taken from Contract Documents multiplied by unit cost to achieve total for each item.
- E. Include within each line item direct proportional amount of Contractor's overhead and profit.
- F. Revise schedule to list approved Change Orders, with each Application for Payment.

1.3 APPLICATIONS FOR PAYMENT

- A. Submit three copies of each application on EJCDC C-620 Contractor's Application for Payment (2018). Electronic format will be provided by the Owner.

- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Submit updated construction schedule with each Application for Payment.
- D. Payment Period: Submit at intervals stipulated in the Agreement.
- E. Submit with transmittal letter as specified for Submittals in Section 01 33 00 - Submittal Procedures.
- F. Substantiating Data: When Owner requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
  1. Current construction photographs specified in Section 01 33 00 – Submittal Procedures.
  2. Partial release of liens from major subcontractors and vendors.
  3. Record documents as specified in Section 01 70 00, for review by Owner which will be returned to Contractor.
  4. Affidavits attesting to off-site stored products.
  5. Construction progress schedules revised and current as specified in Section 01 33 00 – Submittal Procedures.

#### 1.4 CHANGE PROCEDURES

- A. Submittals: Submit name of individual authorized to receive change documents and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.
- B. The Owner will advise of minor changes in the Work not involving adjustment to Contract Price or Contract Time by issuing supplemental instructions.
- C. The Owner may issue a Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with stipulation of overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 15 days.
- D. Contractor may propose changes by submitting a request for change to Owner, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Price and Contract Time with full documentation and a statement describing effect on Work by separate or other Contractors. Document requested substitutions in accordance with Section 00 21 13[14] – Instructions to Bidders.
- E. Stipulated Price Change Order: Based on Notice of Change and Contractor's fixed price quotation or Contractor's request for Change Order as approved by Owner.
- F. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under Work Change Directive. Changes in Contract Price or Contract Time will be computed as specified for Time and Material Change Order.

- G. Work Change Directive: Owner or Owner Representative may issue directive, on EJCDC C-940 Work Change Order Directive (2018) signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Price or Contract Time. Promptly execute change.
- H. Force Account Change Order: Submit itemized account and supporting data after completion of change within time limits indicated in Conditions of the Contract. Owner or Owner Representative will determine change allowable in Contract Price and Contract Time as provided in Contract Documents.
- I. Maintain detailed records of work done on Force Account basis. Provide full information required for evaluation of proposed changes and to substantiate costs for changes in the Work.
- J. Document each quotation for change in cost or time with sufficient data to allow evaluation of quotation.
- K. Change Order Forms: EJCDC C-941 Change Order (2018).
- L. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in Conditions of the Contract.
- M. Correlation Of Contractor Submittals:
  1. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Price.
  2. Promptly revise progress schedules to reflect change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
  3. Promptly enter changes in Project Record Documents.

## 1.5 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Owner or Owner Representative, it is not practical to remove and replace the Work, the Owner or Owner Representative will direct appropriate remedy or adjust payment.
- C. The defective Work may remain, but unit price will be adjusted to new price at discretion of Owner.
- D. Defective Work will be partially repaired to instructions of Owner, and unit price will be adjusted to new price at discretion of Owner.
- E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.
- F. Authority of Owner or Owner Representative to assess defects and identify payment adjustments is final.



- G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
  - 1. Products wasted or disposed of in a manner that is not acceptable.
  - 2. Products determined as unacceptable before or after placement.
  - 3. Products not completely unloaded from transporting vehicle.
  - 4. Products placed beyond lines and levels of required Work.
  - 5. Products remaining on hand after completion of the Work.
  - 6. Loading, hauling, and disposing of rejected products.

## 1.6 UNIT PRICES

- A. Authority: Measurement methods are delineated in individual Specification Sections.
- B. Measurement methods delineated in individual Specification Sections complement criteria of this Section. In event of conflict, requirements of individual Specification Section govern.
- C. Owner or Owner Representative will take measurements and compute quantities accordingly. Provide assistance in taking of measurements.
- D. Unit Quantities: Quantities and measurements indicated in Bid Form are for contract purposes only. Actual quantities provided shall determine payment.
  - 1. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at unit sum/prices contracted.
- E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals, erection, application or installation of item of the Work, overhead, and profit.
- F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by the Work.
- G. Measurement Of Quantities:
  - 1. Weigh Scales: Inspected, tested, and certified by applicable State Weights and Measures Department within past year.
  - 2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
  - 3. Metering Devices: Inspected, tested, and certified by applicable State Department within past year.
  - 4. Measurement by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
  - 5. Measurement by Volume: Measured by cubic dimension using mean length, width and height or thickness.
  - 6. Measurement by Area: Measured by square dimension using mean length and width or radius.
  - 7. Linear Measurement: Measured by linear dimension at item centerline or mean chord.
  - 8. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as completed item or unit of the Work.

H. Unit Price Schedule: Refer to Bid Form.

1.7 ALTERNATES

A. None.

1.8 CASH ALLOWANCES

A. None.

1.9 CONTINGENCY ALLOWANCES

- A. The Bid Form includes a Contingency allowance of \$40,000 for use upon Owner's instructions.
- B. Contractor's costs for products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead, and profit will be included in Change Orders authorizing expenditure of funds from this Contingency Allowance.
- C. Funds will be drawn from Contingency Allowance only by Change Order.
- D. At closeout of Contract, funds remaining in Contingency Allowance will be credited to Owner by Change Order.

1.10 TESTING AND INSPECTION ALLOWANCES

A. None.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01 30 00  
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination.
- B. Field engineering.
- C. Preconstruction meeting.
- D. Progress meetings.
- E. Pre-installation meetings.
- F. Cutting and patching.

1.2 COORDINATION

- A. Coordinate scheduling, submittals, and Work of various specification sections to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with existing utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy or partial occupancy.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 FIELD ENGINEERING

- A. Employ Land Survey licensed in State of Project location.

- B. Locate and protect survey control and reference points. Promptly notify Owner or Owner Representative of discrepancies discovered.
- C. Control datum for survey is that indicated on Drawings.
- D. Submit copy of an as-built survey sealed and signed by Land Surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.
- E. Maintain complete and accurate log of control and survey work as Work progresses.
- F. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
- G. Promptly report to Owner or Owner Representative loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- H. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Owner or Owner Representative.

#### 1.4 PRECONSTRUCTION MEETING

- A. Owner or Owner Representative will schedule meeting after Contract time starts to run.
- B. Attendance Required: Owner, Engineer, and Contractor.
- C. Agenda:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Submission of executed bonds and insurance certificates.
  - 3. Distribution of Contract Documents.
  - 4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
  - 5. Designation of personnel representing parties in Contract, Engineer, independent testing firm.
  - 6. Procedures and processing of field decisions, submittals, and substitutions, applications for payments, proposal requests, Change Orders, and Contract closeout procedures.
  - 7. Scheduling.
- D. Owner or Owner Representative will record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, Contractor, and those affected by decisions made.

#### 1.5 PROGRESS MEETINGS

- A. Owner or Owner Representative will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings and administer meetings.
- B. Schedule: Throughout progress of the Work at maximum interval of monthly. Meet more often if Work dictates need.

- C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner, Engineer, and others as appropriate to agenda topics for each meeting.
- D. Agenda:
  - 1. Review minutes of previous meetings.
  - 2. Review of Work progress.
  - 3. Field observations, problems, and decisions.
  - 4. Identification of problems impeding planned progress.
  - 5. Review of submittals schedule and status of submittals.
  - 6. Review of off-site fabrication and delivery schedules.
  - 7. Maintenance of progress schedule.
  - 8. Corrective measures to regain projected schedules.
  - 9. Planned progress during succeeding work period.
  - 10. Coordination of projected progress.
  - 11. Maintenance of quality and work standards.
  - 12. Effect of proposed changes on progress schedule and coordination.
  - 13. Other business relating to Work.
- E. Owner or Owner Representative will record minutes and distribute copies within three days after meeting to participants, with two copies to Owner, Contractor, and those affected by decisions made.

#### 1.6 PRE-INSTALLATION MEETINGS

- A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific Section.
- B. Require attendance of parties directly affecting, or affected by, Work of specific Section.
- C. Notify Engineer and Owner or Owner Representative four days in advance of meeting date.
- D. Prepare agenda and preside at meeting:
  - 1. Review conditions of installation, preparation and installation procedures.
  - 2. Review coordination with related work.
- E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Engineer, Owner, and those affected by decisions made.

#### PART 2 PRODUCTS - Not Used

#### PART 3 EXECUTION

##### 3.1 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements affecting:

1. Structural integrity of element.
  2. Integrity of weather-exposed or moisture-resistant elements.
  3. Efficiency, maintenance, or safety of element.
  4. Visual qualities of sight exposed elements.
  5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
1. Fit the several parts together, to integrate with other Work.
  2. Uncover Work to install or correct ill-timed Work.
  3. Remove and replace defective and non-conforming Work.
  4. Remove samples of installed Work for testing.
  5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.
- E. Cut masonry and concrete materials using masonry saw or core drill.
- F. Cut pavements using concrete saw.
- G. Restore Work with new products in accordance with requirements of Contract Documents.
- H. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.
- I. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- J. Maintain integrity of wall, ceiling, or floor construction, completely seal voids.
- K. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material, to maintain original fire rating.
- L. Identify hazardous substances or conditions exposed during the Work to Engineer for decision or remedy.

END OF SECTION

SECTION 01 33 00  
SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes.
  - 1. Submittal procedures.
  - 2. Product data.
  - 3. Shop drawings.
  - 4. Samples.
  - 5. Design data.
  - 6. Test reports.
  - 7. Certificates.
  - 8. Manufacturer's instructions.
  - 9. Manufacturer's field reports.
  - 10. Construction progress schedules.
  - 11. Proposed products list.
  - 12. Erection drawings.
  - 13. Construction photographs.

1.2 SUBMITTAL PROCEDURES

- A. Submit number of copies Contractor requires, plus two copies Owner or Owner Representative will retain.
- B. Deliver to Owner or Owner Representative at business address.
- C. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.
- D. Transmit each submittal with Owner or Owner Representative accepted form.
- E. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.
- F. Identify Project, Contractor, subcontractor and supplier, pertinent drawing and detail number, and specification Section number appropriate to submittal.
- G. Apply Contractor's stamp signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- H. Schedule submittals to expedite Project. Coordinate submission of related items.
- I. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

- J. Allow space on submittals for Contractor and Owner or Owner Representative review stamps.
- K. When revised for resubmission, identify changes made since previous submission.
- L. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- M. Submittals not requested will not be recognized or processed.

### 1.3 PRODUCT DATA

- A. Product Data: Submit to Owner or Owner Representative for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

### 1.4 SHOP DRAWINGS

- A. Shop Drawings: Submit to Owner or Owner Representative for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
  - 1. Include signed and sealed calculations to support design.
  - 2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
  - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- D. Submit number of copies described in SUBMITTAL PROCEDURES article.

### 1.5 SAMPLES

- A. Samples: Submit to Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
- B. Submit number of samples specified in individual specification sections; Engineer will retain one sample.
- C. Samples For Selection as Specified in Product Sections:



1. Submit to Engineer for aesthetic, color, or finish selection.
  2. Submit samples of finishes from full range of manufacturers' standard colors, in custom colors selected, textures, and patterns for Engineer selection.
- D. Submit samples to illustrate functional and aesthetic characteristics of Products with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- E. Include identification on each sample with full Project information.
- F. Reviewed samples which may be used in the Work are indicated in individual specification sections.
- G. Samples will not be used for testing purposes unless specifically stated in specification section.
- H. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes described in Section 01 70 00 - Execution and Closeout Requirements.

#### 1.6 DESIGN DATA

- A. Submit for Engineer's knowledge as contract administrator or for Owner.
- B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

#### 1.7 TEST REPORTS

- A. Submit for Engineer's knowledge as contract administrator or for Owner.
- B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

#### 1.8 CERTIFICATES

- A. When specified in individual specification Sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Engineer.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product but must be acceptable to Engineer.

#### 1.9 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing to Engineer for delivery to Owner.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special

environmental criteria required for application or installation.

#### 1.10 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for Engineer's knowledge as contract administrator or for Owner.
- B. Submit report within 72 hours of observation to Engineer for information.
- C. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

#### 1.11 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedules within 15 days after date established in Notice to Proceed. After review, resubmit required revised data within 10 days.
- B. Submit revised Progress Schedules with each Progress Meeting or Application for Payment, but not less than monthly.
- C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.
- D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- E. Submit computer generated horizontal bar or Gantt chart with separate line for each major portion of Work or operation, identifying first workday of each week.
- F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.
- G. Indicate estimated percentage of completion for each item of Work at each submission.
- H. Submit separate schedule of submittal dates for shop drawings, product data, and samples. Indicate dates reviewed submittals will be required from Engineer. Indicate decision dates for selection of finishes.
- I. Indicate delivery dates for Owner furnished products and products identified under Allowances if required.
- J. Revisions To Schedules:
  - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
  - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
  - 3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect, including effect of changes on schedules of separate contractors.

#### 1.12 PROPOSED PRODUCTS LIST

- A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

#### 1.13 ERECTION DRAWINGS

- A. Submit drawings for Engineer's knowledge as contract administrator or for Owner.
- B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by Engineer or Owner.

#### 1.14 CONSTRUCTION PHOTOGRAPHS

- A. Provide digital photographs of site and construction throughout progress of Work produced by an experienced photographer, acceptable to Owner or Owner Representative. Submit photographs on thumb-drive or by uploading to web-based project software site.
- B. Submit photographs monthly or to show milestones of Work.
- C. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels, and with vibration-reduction technology. Use flash in low light levels or backlit conditions. Submit digital photographs as originally captured, without alteration, manipulation, editing, or modifications using image-editing software.
- D. Take a minimum of three photographs from differing directions for each section of work indicating relative progress of the Work, three days maximum prior to submitting.
- E. Take photographs as evidence of existing project conditions.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01 40 00  
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Quality control and control of installation.
  - 2. Tolerances.
  - 3. References.
  - 4. Testing and inspection services.
  - 5. Manufacturers' field services.
  - 6. Labeling.
  - 7. Mock-up requirements.
  - 8. Examination.
  - 9. Preparation.

1.2 QUALITY CONTROL AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturers' instructions, including each step-in sequence.
- C. When manufacturers' instructions conflict with Contract Documents, request clarification from Owner or Owner Representative before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce required and specified quality.
- F. Verify field measurements are as indicated on Shop Drawings or as instructed by manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. When manufacturers' tolerances conflict with Contract Documents, request clarification from Owner or Owner Representative before proceeding.

- C. Adjust products to appropriate dimensions; position before securing products in place.

#### 1.4 REFERENCES

- A. For products or Work specified by association, trades, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving Bids, (date of Owner-Contractor Agreement when there are no Bids), except where specific date is established by code.
- C. Obtain copies of standards where required by product specification sections.
- D. When specified reference standards conflict with Contract Documents, request clarification from Owner or Owner Representative before proceeding.
- E. Contractual relationships, duties, and responsibilities of parties in Contract and those of Engineer shall not be altered from Contract Documents by mention or inference otherwise in reference documents.

#### 1.5 TESTING AND INSPECTION SERVICES

- A. Employ and pay for services of an independent firm acceptable to Owner to perform specified testing and inspection.
  - 1. Prior to start of Work, submit testing laboratory name, address, and telephone number, and names of full-time registered Engineer, specialists and responsible officer.
  - 2. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.
- B. Independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Engineer, Owner or Owner Representative.
  - 1. Laboratory: Authorized to operate in State of South Carolina location.
  - 2. Laboratory Staff: Maintain full time registered Engineer and necessary specialists on staff to review services.
  - 3. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.
- C. Testing and inspections may occur on or off project site. Perform off-site testing as required by Engineer or Owner.
- D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
  - 1. Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services.
  - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

- E. Testing and employment of independent firm does not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
- F. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Engineer, Owner or Owner Representative.
  - 1. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.
  - 2. Submit final report indicating correction of Work previously reported as non-compliant.
- G. Independent Firm Responsibilities:
  - 1. Test samples of mixes submitted by Contractor.
  - 2. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
  - 3. Perform specified sampling and testing of products in accordance with specified standards.
  - 4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
  - 5. Promptly notify Owner or Owner Representative and Contractor of observed irregularities or non-conformance of Work or products.
  - 6. Perform additional tests required by Engineer.
  - 7. Attend preconstruction meetings and progress meetings.
- H. Independent Firm Reports: After each test, promptly submit one copy of report to Engineer and Owner; and two copies to Contractor, and authority having jurisdiction. When requested by Engineer, provide interpretation of test results. Include the following:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Name of inspector.
  - 4. Date and time of sampling or inspection.
  - 5. Identification of product and specifications section.
  - 6. Location in Project.
  - 7. Type of inspection or test.
  - 8. Date of test.
  - 9. Results of tests.
  - 10. Conformance with Contract Documents.
- I. Limits On Independent Firm:
  - 1. May not release, revoke, alter, or enlarge on requirements of Contract Documents.
  - 2. May not approve or accept any portion of the Work.
  - 3. May not assume duties of Contractor.
  - 4. Has no authority to stop the Work.

## 1.6 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to:
  - 1. Observe site conditions.
  - 2. Observe conditions of surfaces.
  - 3. Review installation and quality of Work.
  - 4. Review start-up of equipment.

5. Review testing, adjusting and balancing of equipment.
6. Initiate instructions when necessary.

- B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

## 1.7 LABELING

- A. Attach label from agency approved by authority having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label.
  1. Model number.
  2. Serial number.
  3. Performance characteristics.

## 1.8 MOCK-UP REQUIREMENTS

- A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.
- B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- C. Accepted mock-ups shall be comparison standard for remaining Work.
- D. Where mock-up has been accepted by Owner or Owner Representative and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Owner or Owner Representative.

## PART 2 PRODUCTS – NOT USED

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify utility services are available, of correct characteristics, and in correct locations.

### 3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

END OF SECTION



SECTION 01 43 13  
REFERENCES

GENERAL

1.1 SECTION INCLUDES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
  - 1. Quality assurance.
  - 2. Schedule of references.

1.2 RELATED SECTIONS

- A. Document – General Conditions: Reference Standards.

1.3 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trades, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
  - 1. Applicable Codes:
    - a. BOCA National Building Code.
    - b. The National Electrical Code, NFPA 70.
    - c. The Life Safety Code, NFPA 101.
- B. Obtain copies of standards when required by product specification sections.
- C. Maintain copy at jobsite during submittals, planning, and progress of the specific work, until Substantial Completion.
- D. Should specified reference standards conflict with Contract Documents, request clarification from Engineer, Owner or Owner Representative before proceeding.
- E. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.4 SCHEDULE OF REFERENCES

**AA**

Aluminum Association  
900 19th St., NW  
Washington, DC 20006  
[www.aluminum.org](http://www.aluminum.org)  
(202) 862-5100

**AABC**

Associated Air Balance Council  
1518 K St., NW  
Washington, DC 20005  
[www.aabchg.com](http://www.aabchg.com)  
(202) 737-0202

**AAMA**

American Architectural  
Manufacturers Association  
1827 Walden Office Sq., Suite  
104  
Schaumburg, IL 60173-4268  
[www.aamanet.org](http://www.aamanet.org)  
(847) 303-5664

**AASHTO**

American Association of State  
Highway and Transportation  
Officials  
444 North Capitol St., NW, Suite  
249  
Washington, DC 20001  
[www.aashto.org](http://www.aashto.org)  
(202) 624-5800  
(800) 231-3475

**ABMA**

American Bearing Manufacturers  
Association  
1200 19th St., NW, Suite 300  
Washington, DC 20036-2422  
[www.abma-dc.org](http://www.abma-dc.org)  
(202) 429-5155

**ACGIH**

American Conference of  
Governmental  
Industrial Hygienists  
1330 Kemper Meadow Dr. Suite  
600  
Cincinnati, Ohio 45240  
[www.acgih.org](http://www.acgih.org)  
(513) 742-2020

**ACI**

American Concrete Institute  
P.O. Box 9094  
Farmington Hills, MI 48333  
[www.aci-int.org](http://www.aci-int.org)  
(248) 848-3700

**ADC**

Air Diffusion Council  
104 South Michigan Ave., Suite  
1500  
Chicago, IL 60603  
(312) 201-0101

**ADSC**

The International Association of  
Foundation Drilling  
9696 Skillman Street, Suite 280  
Dallas, TX 75243  
[www.adsc-iafd.com](http://www.adsc-iafd.com)  
(214) 681-5994

**AF&PA**

American Forest and Paper  
Association  
1111 19th St., NW, Suite 800  
Washington, DC 20036  
[www.afandpa.org](http://www.afandpa.org)  
(202) 463-2700

**AHA**

American Hardboard Association  
1210 W. Northwest Hwy  
Palatine, IL 60067  
(847) 934-8800

**AI**

Asphalt Institute  
Research Park Drive  
P.O. Box 14052  
Lexington, KY 40512-4052  
[www.asphaltinstitute.org](http://www.asphaltinstitute.org)  
(606) 288-4960

**AISC**

American Institute of Steel  
Construction  
One East Wacker Dr., Suite  
3100  
Chicago, IL 60601-2001  
[www.aisc.org](http://www.aisc.org)  
(312) 670-2400

**AISI**

American Iron and Steel Institute  
1101 17th St., NW, Suite 1300  
Washington, DC 20036  
[www.steel.org](http://www.steel.org)  
(202) 452-7100  
(800) 277-3850

**AITC**

American Institute of Timber  
Construction  
7012 S. Revere Pkwy, Suite 140  
Englewood, CO 80112  
[www.aitc-glulam.org](http://www.aitc-glulam.org)  
(303) 792-9559

**AMCA**

Air Movement and Control  
Association International, Inc.  
30 W. University Dr.  
Arlington Heights, IL 60004-1893  
[www.amca.org](http://www.amca.org)  
(847) 394-0150

**ANSI**

American National Standards  
Institute  
1819 L. Street, N.W.  
Washington, DC 20036  
[www.ansi.org](http://www.ansi.org)  
(202) 293-8020

**APA/EWA**

APA-The Engineered Wood  
Association  
P.O. Box 11700  
Tacoma, WA 98411-0700  
[www.apawood.org](http://www.apawood.org)  
(253) 565-6600

**API**

American Petroleum Institute  
1220 L St., NW  
Washington, DC 20005-4070  
[www.api.org](http://www.api.org)  
(202) 682-8000

**AREMA**

American Railway Engineering  
and  
Maintenance-of-Way Association  
8201 Corporate Drive, Suite  
1125  
Landover, MD 02785-2230  
[www.arema.org](http://www.arema.org)  
(301) 459-3200

**ARI**

Air-Conditioning and  
Refrigeration Institute  
4301 Fairfax Dr., Suite 425  
Arlington, VA 22203  
[www.ari.org](http://www.ari.org)  
(703) 524-8800

**ARRA**

Asphalt Recycling and  
Reclaiming Association  
#3 Church Circle, PMB 250  
Annapolis, MD 21401  
[www.arra.org](http://www.arra.org)  
(410) 267-0023

**ASCE**

American Society of Civil  
Engineers  
World Headquarters  
1801 Alexander Graham Bell Dr.  
Reston, VA 20191-4400  
[www.asce.org](http://www.asce.org)  
(800) 548-2723  
(703) 295-6300

**ASHRAE**

American Society of Heating,  
Refrigerating and Air-  
Conditioning Engineers  
1791 Tullie Circle, NE  
Atlanta, GA 30329  
[www.ashrae.org](http://www.ashrae.org)  
(800) 527-4723  
(404) 636-8400

**ASME**

American Society of Mechanical  
Engineers  
3 Park Ave.  
New York, NY 10016-5990  
[www.asme.org](http://www.asme.org)  
(800) 843-2763

**ASSE**

American Society of Sanitary  
Engineering  
901 Canterbury, Suite A  
Westlake, OH 44145  
[www.asse-plumbing.org](http://www.asse-plumbing.org)  
(440) 835-3040

**ASTM**

ASTM International  
100 Barr Harbor Dr.  
West Conshohocken, PA 19428-  
2959  
[www.astm.org](http://www.astm.org)  
(601) 832-9585

**AWI**

Architectural Woodwork Institute  
1952 Isaac Newton Sq. West  
Reston, VA 20190  
[www.awinet.org](http://www.awinet.org)  
(703) 733-0600

**AWPA**

American Wood-Preservers'  
Association  
P.O. Box 5690  
Granbury, TX 76049  
[www.awpa.com](http://www.awpa.com)  
(817) 326-6300

**AWS**

American Welding Society  
550 NW LeJeune Rd.  
Miami, FL 33126  
[www.amweld.org](http://www.amweld.org)  
(800) 443-9353  
(305) 443-9353

**AWWA**

American Water Works  
Association  
6666 W. Quincy Ave.  
Denver, CO 80235  
[www.awwa.org](http://www.awwa.org)  
(303) 794-7711

**BAAQMD**

Bay Area Air Quality  
Management District  
939 Ellis St.  
San Francisco, CA 94109  
[www.baaqmd.gov](http://www.baaqmd.gov)  
(415) 771-6000

**CDA**

Copper Development  
Association Inc.  
260 Madison Ave., 16th Floor  
New York, NY 10016  
[www.copper.org](http://www.copper.org)  
(800) 232-3282  
(212) 251-7200

**CGA**

Compressed Gas Association  
1725 Jefferson Davis Hwy, Suite  
1004  
Arlington, VA 22202-4102  
[www.cganet.com](http://www.cganet.com)  
(703) 412-0900

**CISCA**

Ceilings and Interior Systems  
Construction Association  
1500 Lincoln Hwy, Suite 202  
St. Charles, IL 60174  
[www.cisca.org](http://www.cisca.org)  
(630) 584-1919

**CISPI**

Cast Iron Soil Pipe Institute  
5959 Shallowford Rd., Suite 419  
Chattanooga, TN 37421  
[www.cispi.org](http://www.cispi.org)  
(423) 892-0137

**CLFMI**

Chain Link Fence Manufacturers  
Institute  
9891 Broken Land Pkwy, Suite  
300  
Columbia, MD 21046  
[www.chainlinkinfo.org](http://www.chainlinkinfo.org)  
(301) 596-2583

**CRI**

Carpet and Rug Institute  
310 S. Holiday Ave.  
Dalton, GA 30722-2048  
[www.carpet-rug.com](http://www.carpet-rug.com)  
(800) 882-8846  
(706) 278-3176

**CRSI**

Concrete Reinforcing Steel  
Institute  
933 N. Plum Grove Rd.  
Schaumburg, IL 60173-4758  
[www.crsi.org](http://www.crsi.org)  
(847) 517-1200

**CSSB**

Cedar Shake and Shingle  
Bureau  
P.O. Box 1178  
Sumas, WA 98295  
[www.cedarbureau.org](http://www.cedarbureau.org)  
(604) 462-8961

**CSI**

Construction Specifications  
Institute  
99 Canal Center Plaza, Suite  
300  
Alexandria, VA 22314  
[www.csinet.org](http://www.csinet.org)  
(800) 689-2900

**CTI**

Cooling Technology Institute  
530 Wells Fargo Drive, Suite  
218  
Houston, TX 77090  
[www.cti.org](http://www.cti.org)  
(281) 583-4087

**DASMA**

Door and Access Systems  
Manufacturers  
Association International  
1300 Summer Avenue  
Cleveland, OH 44115-2851  
[www.dasma.com](http://www.dasma.com)  
(216) 241-7333

**DHI**

The Door and Hardware Institute  
14150 Newbrook Dr., Suite 200  
Chantilly, VA 20151  
[www.dhi.org](http://www.dhi.org)  
(703) 222-2010

**DIPRA**

Ductile Iron Pipe Research  
Association  
245 Riverchase Parkway East,  
Suite O  
Birmingham, AL 35244  
[www.dipra.org](http://www.dipra.org)  
(205) 402-8700

**EIMA**

EIFS Industry Members  
Association  
3000 Corporate Center Dr.,  
Suite 270  
Morrow, GA 30260  
[www.eifsfacts.com](http://www.eifsfacts.com)  
(800) 294-3462  
(770) 968-7945

**EPA**

Environmental Protection  
Agency  
US EPA/NSCEP  
P.O. Box 42419  
Cincinnati, Ohio 45242  
[www.epa.gov](http://www.epa.gov)  
(800) 490-9198

**EPRI**

Electric Power Research  
Institute  
3412 Hillview Avenue  
Palo Alto, California 94304  
[WWW.EPRI.COM](http://WWW.EPRI.COM)  
(650) 855-8900

**FAA**

Federal Aviation Administration  
800 Independence Ave., SW  
Washington, DC 20591  
[www.faa.gov](http://www.faa.gov)  
(202) 366-4000

**FIBA**

International Basketball  
Federation  
(Federation Internationale De  
Basketball)  
8, Ch. De Blandonnet  
1214 Vernier / Geneva  
Switzerland  
[www.fiba.com](http://www.fiba.com)  
(+41-22) 545.00.00

**FM**

FM Global  
Corporate Headquarters.  
P.O. Box 7500  
Johnston, RI 02919  
[www.fmglobal.com](http://www.fmglobal.com)  
(401) 275-3000

**FS**

Federal Specification Unit  
General Services Admin.  
Federal Supply Service  
FSS Acquisition Management  
Center  
Environmental Programs and  
Engineering Policy Division  
Washington, DC 20406  
[www.gsa.gov](http://www.gsa.gov)  
(703) 305-5682

**FSC**

Forest Stewardship Council  
1155 30th St. NW  
Suite 300  
Washington, DC 20007  
[www.fscus.org](http://www.fscus.org)  
(877) 372-5646

**GA**

Gypsum Association  
810 First St., NE, Suite 510  
Washington, DC 20002  
[www.usg.com](http://www.usg.com)  
[www.gypsum.org](http://www.gypsum.org)  
(202) 289-5440

**GANA**

Glass Association of North  
America  
2945 Southwest Wanamaker  
Dr., Suite A  
Topeka, KS 66614  
[www.glasswebsite.com](http://www.glasswebsite.com)  
(785) 271-0208

**GS**

Green Seal  
1001 Connecticut Ave.  
Suite 827  
Washington, DC 20036-5525  
[www.greenseal.org](http://www.greenseal.org)  
(202) 872-6400

**HI**

Hydronics Institute  
Division of Gas Appliance  
Manufacturers Association  
2107 Wilson Blvd., Suite 600  
Arlington, VA 22201  
[www.gamanet.org](http://www.gamanet.org)  
(703) 525-7060

**HMMA**

Hollow Metal Manufacturers  
Association  
Division of NAAMM  
8 South Michigan Ave., Suite  
1000  
Chicago, IL 60603  
[www.naamm.org](http://www.naamm.org)  
(312) 332-0405

**HPVA**

Hardwood Plywood and Veneer  
Association  
P.O. Box 2789  
Reston, VA 20195-0789  
[www.hpva.org](http://www.hpva.org)  
(703) 435-2900

**IAS**

International Approval Services  
U.S. Operations  
8501 E. Pleasant Valley Rd.  
Cleveland, Ohio 44131-5575  
[www.iasonline.org](http://www.iasonline.org)  
(216) 524-4990

**ICC**

International Code Council  
5203 Leesburg Pike #708  
Falls Church, VA 22041  
[www.iccsafe.org](http://www.iccsafe.org)  
(703) 931-4533

**IEEE**

Institute of Electrical and  
Electronics Engineers  
3 Park Ave., 17th Floor  
New York, NY 10016-5997  
[www.ieee.org](http://www.ieee.org)  
(212) 419-7900

**IES**

Illuminating Engineering Society  
of North America  
120 Wall Street, 17th Floor  
New York, NY 10005  
[www.iesna.org](http://www.iesna.org)  
(212) 248-5000

**IGSHPA**

International Ground Source  
Heat Pump Association  
Oklahoma State University  
499 Cordell South  
Stillwater, OK 74078  
[www.igsHPA.okstate.edu](http://www.igsHPA.okstate.edu)  
(800) 626-4747

**ILI**

Indiana Limestone Institute of  
America  
400 Stone City Bank Building  
Bedford, IN 47421  
[www.iliai.com](http://www.iliai.com)  
(812) 275-4426

**ISO**

International Organization for  
Standardization  
1, rue de Varembe, Case  
postale 56  
CH-1211 Geneva 20,  
Switzerland  
[www.iso.org](http://www.iso.org)  
+41 22 749 01 11

**KCMA**

Kitchen Cabinet Manufacturers  
Association  
1899 Preston White Dr.  
Reston, VA 20191-5435  
[www.kcma.org](http://www.kcma.org)  
(703) 264-1690

**LPI**

Lightning Protection Institute  
3335 N. Arlington Heights Rd.,  
Suite E  
Arlington Heights, IL 60004  
[www.lightning.org](http://www.lightning.org)  
(800) 488-6864  
(847) 577-7200

**MBMA**

Metal Building Manufacturers  
Association  
1300 Sumner Ave.  
Cleveland, OH 44115-2851  
[www.mbma.com](http://www.mbma.com)  
(216) 241-7333

**MFMA**

Maple Flooring Manufacturers  
Association  
60 Revere Dr., Suite 500  
Northbrook, IL 60062  
[www.maplefloor.org](http://www.maplefloor.org)  
(847) 480-9138

**MIA**

Marble Institute of America  
30 Eden Alley, Suite 301  
Columbus, OH 43215  
[www.marble-institute.com](http://www.marble-institute.com)  
(614) 228-6194

**MIL**

Military Standardization  
Documents  
Defense Automated Printing  
Service  
700 Robbins Ave., Building 4D  
Philadelphia, PA 19111-5094  
[www.dodssp.daps.mil](http://www.dodssp.daps.mil)  
(215) 697-2179

**MSS**

Manufacturers Standardization  
Society of the Valve  
and Fittings Industry  
127 Park St., NE  
Vienna, VA 22180-4602  
[www.mss-hq.com](http://www.mss-hq.com)  
(703) 281-6613

**NAA**

National Arborist Association  
Route 101, P.O. Box 1094  
Amherst, NH 03031-1094  
[www.natlarb.com](http://www.natlarb.com)  
(800) 733-2622  
(603) 673-3311

**NAAMM**

National Association of  
Architectural Metal  
Manufacturers  
800 Roosevelt Road, Building C,  
Suite 312  
Glen Ellyn, IL 60137  
[www.naamm.org](http://www.naamm.org)  
(630) 942-6591

**NAAMM**

North American Association of  
Mirror Manufacturers  
(Division of GANA)  
2945 Southwest Wanamaker  
Dr., Suite A  
Topeka, KS 66614  
[www.glasswebsite.com](http://www.glasswebsite.com)  
(913) 266-7013

**NACE**

NACE International  
1440 South Creek Drive  
Houston, TX 77084  
[www.nace.org](http://www.nace.org)  
(281) 228-6200

**NAIMA**

North American Insulation  
Manufacturers Association  
44 Canal Center Plaza, Suite  
310  
Alexandria, VA 22314  
[www.naima.org](http://www.naima.org)  
(703) 684-0084

**NBGQA**

National Building Granite  
Quarries Association, Inc.  
1220 L. St., NW, Suite 100-167  
Washington, DC 20005  
[www.nbgqa.com](http://www.nbgqa.com)  
(800) 557-2848

**NCAA**

The National Collegiate Athletic  
Association  
700 W. Washington Street  
P.O. Box 6222  
Indianapolis, Indiana 46206-  
6222  
[www.ncaa.org](http://www.ncaa.org)  
(317) 917-6222

**NCMA**

National Concrete Masonry  
Association  
2302 Horse Pen Rd.  
Herndon, VA 20171-3499  
[www.ncma.org](http://www.ncma.org)  
(703) 713-1900

**NCRP**

National Council on Radiation  
Protection and Measurement  
7910 Woodmont Ave., Suite 800  
Bethesda, MD 20814-3095  
[www.ncrponline.com](http://www.ncrponline.com)  
(301) 657-2652

**NEBB**

National Environmental  
Balancing Bureau  
8575 Grovemont Circle  
Gaithersburg, MD 20877  
[www.nebb.org](http://www.nebb.org)  
(301) 977-3698

**NECA**

National Electrical Contractors  
Association  
3 Bethesda Metro Center, Suite  
1100  
Bethesda, MD 20814  
[www.necanet.org](http://www.necanet.org)  
(301) 657-3110

**NELMA**

Northeastern Lumber  
Manufacturers Association  
272 Tuttle Rd.  
P.O. Box 87A  
Cumberland Center, ME 04021  
[www.nelma.org](http://www.nelma.org)  
(207) 829-6901

**NEMA**

National Electrical  
Manufacturers Association  
1300 N 17th St., Suite 1847  
Rosslyn, VA 22209  
[www.nema.org](http://www.nema.org)  
(703) 841-3200

**NETA**

International Electrical Testing  
Association  
P.O. Box 687  
106 Stone St.  
Morrison, CO 80465  
[www.netaworld.org](http://www.netaworld.org)  
(303) 697-8441

**NFHS**

National Federation of State  
High School Associations  
P.O. Box 690  
Indianapolis, Indiana 46206  
[www.nfhs.org](http://www.nfhs.org)  
(317) 972-6900

**NFPA**

National Fire Protection  
Association  
One Batterymarch Park  
P.O. Box 9101  
Quincy, MA 02269-9101  
[www.nfpa.org](http://www.nfpa.org)  
(800) 344-3555  
(617) 770-3000

**NFRC**

National Fenestration Rating  
Council  
1300 Spring St., Suite 500  
Silver Spring, MD 20910  
[www.nfrc.org](http://www.nfrc.org)  
(301) 589-6372

**NIBS**

National Institute of Building  
Sciences  
1090 Vermont Ave., NW, Suite  
700  
Washington, DC 20005-4905  
[www.nibs.org](http://www.nibs.org)  
(202) 289-7800

**NIST**

National Institute of Standards  
and Technology  
100 Bureau Dr., MS 2150  
Gaithersburg, MD 20899-2150  
[www.nist.gov](http://www.nist.gov)  
(301) 975-4025

**NLA**

National Lime Association  
200 North Glebe Rd., Suite 800  
Arlington, VA 22203  
[www.lime.org](http://www.lime.org)  
(703) 243-5463

**NLGA**

National Lumber Grades  
Authority  
#406-First Capital Pl.  
960 Quayside Dr.  
New Westminster, BC V3M 6G2  
CANADA  
[www.nlga.org](http://www.nlga.org)  
(604) 524-2393

**NOFMA**

National Oak Flooring  
Manufacturers Association  
P.O. Box 3009  
Memphis, TN 38173-0009  
[www.nofma.org](http://www.nofma.org)  
(901) 526-5016

**NOMMA**

National Ornamental and  
Miscellaneous Metals  
532 Forest Pkwy., Suite A  
Forest Park, GA 30297  
[www.nomma.org](http://www.nomma.org)  
(404) 363-4009

**NPCA**

National Paint and Coatings  
Association  
1500 Rhode Island Ave., NW  
Washington, DC 20005  
[www.paint.org](http://www.paint.org)  
(202) 462-6272

**NPCA**

National Precast Concrete  
Association  
10333 N Meridian St. Ste. 272  
Indianapolis IN 46290-1081  
[www.precast.org](http://www.precast.org)  
(317) 571-9500

**NRCA**

National Roofing Contractors  
Association  
O'Hare International Center  
10255 W. Higgins Rd., Suite 600  
Rosemont, IL 60018  
[www.roofonline.org](http://www.roofonline.org)  
(847) 299-9070

**NSF**

NSF International  
P.O. Box 130140  
Ann Arbor, MI 48113-0140  
[www.nsf.org](http://www.nsf.org)  
(734) 769-8010  
(800) 673-6275

**NSPI**

National Spa and Pool Institute  
2111 Eisenhower Ave.  
Alexandria, VA 22314  
[www.nesppool.org](http://www.nesppool.org)  
(703) 838-0083

**NTMA**

National Terrazzo and Mosaic  
Association  
110 E. Market St., Suite 200-A  
Leesburg, VA 20176  
[www.ntma.com](http://www.ntma.com)  
(800) 323-9736  
(703) 779-1022

**NUCA**

National Utility Contractors  
Association  
4301 North Fairfax Dr., Suite  
360  
Arlington, VA 22203-1627  
[www.nuca.com](http://www.nuca.com)  
(703) 358-9300

**PCA**

Portland Cement Association  
5420 Old Orchard Rd.  
Skokie, IL 60077  
[www.cement.org](http://www.cement.org)  
(847) 966-6200

**PCI**

Precast/Prestressed Concrete  
Institute  
209 W. Jackson Blvd.  
Chicago, IL 60606-6938  
[www.pci.org](http://www.pci.org)  
(312) 786-0300

**PDCA**

Painting and Decorating  
Contractors of America  
3913 Old Lee Hwy, Suite 33-B  
Fairfax, VA 22030  
[www.pdca.com](http://www.pdca.com)  
(703) 359-0826

**PDI**

Plumbing and Drainage Institute  
45 Bristol Dr.  
South Easton, MA 02375  
[www.PDIonline.org](http://www.PDIonline.org)  
(800) 589-8956



**PEI**

Petroleum Equipment Institute  
P.O. Box 2380  
Tulsa, OK 74101-2380  
[www.pei.org](http://www.pei.org)  
(918) 494-9696

**PTI**

Post Tensioning Institute  
1717 W. Northern Ave., Suite  
114  
Phoenix, AZ 85021  
[www.post-tensioning.org](http://www.post-tensioning.org)  
(602) 870-7540

**RCSC**

Research Council on Structural  
Connections  
[www.boltcouncil.org](http://www.boltcouncil.org)

**RIS**

The Redwood Inspection  
Service  
630 J Street  
Eureka, CA 95501  
(707) 444-3024

**SCAQMD**

South Coast Air Quality  
Management District  
21865 E. Copley Dr.  
Diamond Bar, CA 91765  
[www.cypressinfo.org](http://www.cypressinfo.org)  
(800) 288-7664  
(909) 396-2000

**SCMA**

Southern Cypress  
Manufacturers Association  
400 Penn Center Blvd., #530  
Pittsburgh, PA 15235  
[www.cypressinfo.org](http://www.cypressinfo.org)  
(877) 607-7262

**SDI**

Steel Deck Institute  
P.O. Box 25  
Fox River Grove, IL 60021  
[www.sdi.org](http://www.sdi.org)  
(847) 462-1930

**SDI**

Steel Door Institute  
30200 Detroit Rd.  
Cleveland, OH 44145-1967  
[www.steeldoor.org](http://www.steeldoor.org)  
(440) 899-0010

**SIGMA**

Sealed Insulating Glass  
Manufacturers Association  
401 N. Michigan Ave.  
Chicago, IL 60611  
[www.igmaonline.org](http://www.igmaonline.org)  
(312) 644-6610

**SJI**

Steel Joist Institute  
3127 10th Ave., North Ext.  
Myrtle Beach, SC 29577-6760  
(843) 626-1995

**SMACNA**

Sheet Metal and Air Conditioning  
Contractors'  
National Association  
4201 Lafayette Center Dr.  
Chantilly, VA 20151-1209  
[www.smacna.org](http://www.smacna.org)  
(703) 803-2980

**SPIB**

Southern Pine Inspection  
Bureau  
4709 Scenic Hwy  
Pensacola, FL 32504-9094  
[www.spib.org](http://www.spib.org)  
(850) 434-2611

**SPRI**

Single Ply Roofing Institute  
200 Reservoir St., 309 A  
Needham, MA 02494  
[www.spri.org](http://www.spri.org)  
(781) 444-0242

**SSPC**

SSPC: The Society for  
Protective Coatings  
40 24th St., 6th Floor  
Pittsburgh, PA 15222-4656  
[www.sspc.org](http://www.sspc.org)  
(800) 837-8303  
(412) 281-2331

**STI**

Steel Tank Institute  
570 Oakwood Rd.  
Lake Zurich, IL 60047  
[www.steeltank.com](http://www.steeltank.com)  
(847) 438-8265

**SWI**

Steel Window Institute  
1300 Sumner Ave.  
Cleveland, OH 44115-2851  
[www.steelwindows.com](http://www.steelwindows.com)  
(216) 241-7333

**SWRI**

Sealant, Waterproofing and  
Restoration Institute  
2841 Main St.  
Kansas City, MO 64108  
[www.swrionline.org](http://www.swrionline.org)  
(816) 472-7974

**TCA**

Tile Council of America, Inc.  
100 Clemson Research Blvd.  
Anderson, S.C. 29625  
[www.tileusa.com](http://www.tileusa.com)  
(864) 646-8453

**TIA/EIA**

Telecommunications Industry  
Association  
/Electronic Industries Alliance  
2500 Wilson Blvd., Suite 300  
Arlington, VA 22201  
[www.tiaonline.org](http://www.tiaonline.org)  
(703) 907-7700

**TMS**

The Masonry Society  
3970 Broadway, Suite 201-D  
Boulder, CO 80304-1135  
[www.masonrysociety.org](http://www.masonrysociety.org)  
(303) 939-9700

**TPI**

Truss Plate Institute  
583 D'Onofrio Dr., Suite 200  
Madison, WI 53719  
[www.tpinst.org](http://www.tpinst.org)  
(608) 833-5900

**TPI**

Turfgrass Producers  
International  
1855-A Hicks Rd.  
Rolling Meadows, IL 60008  
[www.turfgrassod.org](http://www.turfgrassod.org)  
(800) 405-8873  
(847) 705-9898

**UL**

Underwriters Laboratories Inc.  
333 Pfingsten Rd.  
Northbrook, IL 60062-2096  
[www.ul.com](http://www.ul.com)  
(847) 272-8800

**USGBC**

U.S. Green Building Council  
1015 18th St., NW, Suite 805  
Washington, DC 20036  
[www.usgbc.org](http://www.usgbc.org)  
(202) 828-7422

**WCLIB**

West Coast Lumber Inspection  
Bureau  
P.O. Box 23145  
Portland, OR 97281  
[www.wclib.org](http://www.wclib.org)  
(503) 639-0651

**WDMA**

Window and Door Manufacturers  
Association  
1400 E. Touhy Ave., Suite 470  
Des Plaines, IL 60018  
(800) 223-2301

**WH**

Intertek Testing Services  
(Warnock Hersey Listed)  
3210 American Drive  
Mississauga, Ontario  
Canada L4V 1B3  
[www.intertek-etlsemko.com](http://www.intertek-etlsemko.com)  
(905) 678-7820

**WI**

Woodwork Institute  
3188 Industrial Blvd.  
West Sacramento, CA 95691  
[www.woodworkinstitute.com](http://www.woodworkinstitute.com)  
(916) 372-9943

**WWPA**

Western Wood Products  
Association  
522 SW 5th Ave., Suite 500  
Portland, OR 97204-2122  
[www.wwpa.org](http://www.wwpa.org)  
(503) 224-3930

END OF SECTION

SECTION 01 50 00  
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary Utilities:
    - 1. Temporary electricity.
    - 2. Temporary lighting for construction purposes.
    - 3. Temporary heating, ventilation, and cooling.
    - 4. Telephone, facsimile, and internet service.
    - 5. Temporary water service.
    - 6. Temporary sanitary facilities.
  
  - B. Construction Facilities:
    - 1. Contractor's Field offices and sheds.
    - 2. Project identification.
    - 3. Vehicular access.
    - 4. Parking.
    - 5. Progress cleaning and waste removal.
    - 6. Traffic regulation.
    - 7. Fire prevention facilities.
  
  - C. Temporary Controls:
    - 1. Barriers.
    - 2. Enclosures and fencing.
    - 3. Security.
    - 4. Water control.
    - 5. Dust control.
    - 6. Erosion and sediment control.
    - 7. Noise control.
    - 8. Pest and rodent control.
    - 9. Pollution control.
  
  - D. Removal of temporary utilities, facilities, and controls.
- 1.2 TEMPORARY ELECTRICITY
- A. Provide and pay for power service required from utility source as needed for construction operation.
  
  - B. Provide temporary electric feeder from electrical service at location as directed by Owner. Do not disrupt Owner's use of service.
  
  - C. Complement existing power service capacity and characteristics as required for construction operations.

- D. Provide power outlets, with branch wiring and distribution boxes located as required for construction operations. Provide flexible power cords as required for portable construction tools and equipment.
- E. Provide main service disconnect and over-current protection at convenient location or feeder switch at source distribution equipment.
- F. Permanent convenience receptacles may not be utilized during construction.

### 1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations.
- B. Provide and maintain 1 watt/square foot lighting to exterior staging and storage areas after dark for security purposes.
- C. Provide and maintain 0.25 watt/square foot HID lighting to interior work areas after dark for security purposes.
- D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps for specified lighting levels.
- E. Maintain lighting and provide routine repairs.
- F. Permanent building lighting may not be utilized during construction.

### 1.4 TEMPORARY WATER SERVICE

- A. Provide and pay for suitable quality water service as needed to maintain specified conditions for construction operations. Connect to existing water source if available and provide separate metering per utility company requirements.
- B. Extend branch piping with outlets located so water is available by hoses with threaded connections. Provide temporary pipe insulation to prevent freezing.

### 1.5 TEMPORARY SANITARY FACILITIES

- A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of project mobilization.
- B. At end of construction, return existing facilities used for construction operations to same or better condition as original condition.

### 1.6 CONTRACTORS FIELD OFFICES AND SHEDS

- A. None Required.

## 1.7 ENGINEERS FIELD OFFICE

- A. None Required.

## 1.8 PROJECT IDENTIFICATION.

- A. Project Identification Sign:
  - 1. Not Required.

## 1.9 VEHICULAR ACCESS

- A. Construct temporary all-weather access roads from public thoroughfares to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.
- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.
- D. Location as indicated on Drawings or approved by Engineer.
- E. Provide unimpeded access for emergency vehicles. Maintain 20-foot wide driveways with turning space between and around combustible materials.
- F. Provide and maintain access to fire hydrants and control valves free of obstructions.
- G. Provide means of removing mud from vehicle wheels before entering streets.

## 1.10 PARKING

- A. Provide temporary gravel surface parking areas to accommodate construction personnel.
- B. When site space is not adequate, provide additional off-site parking.
- C. Use of designated existing on-site streets and driveways for construction traffic is not permitted. Tracked vehicles not allowed on paved areas.
- D. Use of designated areas of existing parking facilities by construction personnel is not permitted.
- E. Do not allow heavy vehicles or construction equipment in parking areas.
- F. Permanent Pavements and Parking Facilities:
  - 1. Prior to Substantial Completion, bases for permanent roads and parking areas may be used for construction traffic.
  - 2. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.
  - 3. Use of permanent parking structures is not permitted unless approved by the Owner and Engineer.

- G. Maintenance:
  - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
  - 2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.
- H. Removal, Repair:
  - 1. Remove temporary materials and construction at Substantial Completion.
  - 2. Remove underground work and compacted materials to depth of 2 feet; fill and grade site as specified.
  - 3. Repair existing or permanent facilities damaged by use, to original or specified condition.
- I. Mud from Site Vehicles: Provide means of removing mud from vehicle wheels before entering streets.

#### 1.11 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing spaces.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.
- E. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

#### 1.12 TRAFFIC REGULATION

- A. Signs, Signals, and Devices:
  - 1. Post Mounted and Wall Mounted Traffic Control and Informational Signs: As approved by authority having jurisdiction.
  - 2. Automatic Traffic Control Signals: As approved by local jurisdictions.
  - 3. Traffic Cones and Drums, Flares and Lights: As approved by authority having jurisdiction.
  - 4. Flagperson Equipment: As required by authority having jurisdiction.
- B. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- C. Flares and Lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- D. Haul Routes:

1. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
  2. Use haul routes and site access as indicated on Drawings.
  3. Confine construction traffic to designated haul routes.
  4. Provide traffic control at critical areas of haul routes to regulate traffic, to minimize interference with public traffic.
- E. Traffic Signs and Signals:
1. Provide signs at approaches to site and on site, at crossroads, detours, parking areas, and elsewhere as needed to direct construction and affected public traffic.
  2. Provide, operate, and maintain automatic traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations.
  3. Relocate as Work progresses, to maintain effective traffic control.
- F. Removal:
1. Remove equipment and devices when no longer required.
  2. Repair damage caused by installation.
  3. Remove post settings to depth of 2 feet.

#### 1.13 FIRE PREVENTION FACILITIES

- A. Prohibit smoking with buildings under construction and demolition. Designate area on site where smoking is permitted. Provide approved ashtrays in designated smoking areas.
- B. Establish fire watch for cutting and welding and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.
- C. Standpipes: Maintain existing standpipes in usable condition to height within one floor of floor being demolished.
- D. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60BC UL rating.
  1. Provide one fire extinguisher at each stair on each floor of buildings under construction and demolition.
  2. Provide minimum one fire extinguisher in every construction trailer and storage shed.
  3. Provide minimum one fire extinguisher on roof during roofing operations using heat producing equipment.

#### 1.14 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by authorities having jurisdiction for public rights-of-way and for public access to existing building.
- C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

#### 1.15 ENCLOSURES AND FENCING

A. Construction: Contractor's option or as designated on plans.

B. When and where indicated, provide fencing of sufficient height around construction site; equip with vehicular and pedestrian gates with locks.

#### 1.16 SECURITY

A. Security Program:

1. Protect Work and existing premises from theft, vandalism, and unauthorized entry.
2. Initiate program at project mobilization.
3. Maintain program throughout construction period until Owner acceptance precludes need for Contractor security.

#### 1.17 WATER CONTROL

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

#### 1.18 DUST CONTROL

A. Execute Work by methods to minimize raising dust from construction operations.

B. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

#### 1.19 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize surface area of bare soil exposed at one time.

C. Provide temporary measures including berms, dikes, and drains, and other devices as indicated to prevent water flow.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

#### 1.20 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise produced by construction operations.



### 1.21 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

### 1.22 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials prior to Substantial Completion inspection.
- B. Remove underground installations to minimum depth of 2 feet. Grade site as indicated on Drawings.
- C. Clean and repair damage caused by installation or use of temporary work.
- D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION

SECTION 01 70 00  
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes the following:
1. Closeout procedures.
  2. Final cleaning.
  3. Starting of systems.
  4. Demonstration and instructions.
  5. Protecting installed construction.
  6. Project record documents.
  7. Operation and maintenance data.
  8. Manual for materials and finishes.
  9. Manual for equipment and systems.
  10. Spare parts and maintenance products.
  11. Product warranties and product bonds.

1.2 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Owner or Owner Representative's review.
- B. Provide submittals to Owner or Owner Representative required by authorities having jurisdiction.
- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.3 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.
- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.

- F. Clean site; sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from site.

#### 1.4 STARTING OF SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify Owner or Owner Representative seven days prior to start-up of each item.
- C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative and Contractors' personnel in accordance with manufacturers' instructions.
- G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
- H. Submit a written report in accordance with Section 01 33 00 - Submittal Procedures.

#### 1.5 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of substantial completion.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- D. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time at equipment location.
- E. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
- F. Required instruction time for each item of equipment and system is specified in individual Sections.

## 1.6 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

## 1.7 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
  - 5. Reviewed Shop Drawings, Product Data, and Samples.
  - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
  - 1. Manufacturer's name and product model and number.
  - 2. Product substitutions or alternates utilized.
  - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
  - 1. Measured depths of foundations in relation to finish first floor datum.
  - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

4. Field changes of dimension and detail.
5. Details not on original Contract drawings.

G. Submit documents to Owner or Owner Representative.

## 1.8 OPERATION AND MAINTENANCE DATA

- A. Submit data bound in 8-1/2 x 11 inch (A4) text pages, three D side ring capacity expansion binders with durable plastic covers.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.
- C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.
- E. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
  1. Part 1: Directory listing names, addresses, and telephone numbers of Owner, Owner Representative, Contractor, Subcontractors, and major equipment suppliers.
  2. Part 2: Operation and maintenance instructions arranged by system or process flow and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
    - a. Significant design criteria.
    - b. List of equipment.
    - c. Parts list for each component.
    - d. Operating instructions.
    - e. Maintenance instructions for equipment and systems.
    - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
  3. Part 3: Project documents and certificates, including the following:
    - a. Shop drawings and product data.
    - b. Air and water balance reports.
    - c. Certificates.
    - d. Originals and Photocopies of warranties and bonds.

## 1.9 MANUAL FOR MATERIALS AND FINISHES

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Owner or Owner Representative will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

- C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Owner or Owner Representative comments. Revise content of document sets as required prior to final submission.
- D. Submit two sets of revised final volumes in final form within 10 days after final inspection.
- E. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for reordering custom manufactured products.
- F. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- G. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- H. Additional Requirements: As specified in individual product Specification Sections.
- I. Include listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.

#### 1.10 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Owner or Owner Representative will review draft and return one copy with comments.
- B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.
- C. Submit one copy of completed volumes 15 days prior to final inspection. Draft copy be reviewed and returned after final inspection, with Owner or Owner Representative comments. Revise content of document sets as required prior to final submission.
- D. Submit two sets of revised final volumes in final form within 10 days after final inspection.
- E. Each Item of Equipment and Each System: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
- F. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed or by label machine.
- G. Include color coded wiring diagrams as installed.

- H. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and special operating instructions.
- I. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- J. Include servicing and lubrication schedule, and list of lubricants required.
- K. Include manufacturer's printed operation and maintenance instructions.
- L. Include sequence of operation by controls manufacturer.
- M. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- N. Include control diagrams by controls manufacturer as installed.
- O. Include Contractor's coordination drawings, with color coded piping diagrams as installed.
- P. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- Q. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- R. Include test and balancing reports as specified in Section 01 40 00 - Quality Requirements.
- S. Additional Requirements: As specified in individual product Specification Sections.
- T. Include listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

#### 1.11 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.
- B. Deliver to project site and place in location as directed by Owner; obtain receipt prior to final payment.

#### 1.12 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of work.

- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.
- D. Co-execute submittals when required.
- E. Include Table of Contents and assemble in three D side ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
  - 2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond date of substantial completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

#### 1.13 TESTING, ADJUSTING AND BALANCING

- A. Employ and pay for services of an independent firm acceptable to Owner to perform specified testing and inspection.
- B. Reports will be submitted by independent firm to Owner and Owner representative indicating observations and results of tests and indicating compliance or non-compliance with requirements of Contract Documents.

PART 2 PRODUCTS – NOT USED

PART 3 EXECUTION – NOT USED

END OF SECTION



SECTION 01 71 13  
MOBILIZATION

PART 1 GENERAL

1.1 SUMMARY:

- A. The work covered by this section consists of preparatory work and operations, including but not limited to:
  - 1. Those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site.
  - 2. Those items necessary for providing the items required by the General Provisions, Special Provisions, and General Requirements.
  - 3. Those items including but not limited to: the establishment of all temporary fencing, staging areas, temporary access and haul routes, and other facilities necessary for work in the project.
  - 4. Those items necessary for the maintenance of vehicle and construction traffic; including but not limited to: portable and stationary construction signs, barricades, drums, cones, and other traffic control devices.
  - 5. Surveying and construction staking.
  - 6. All barricades, barricade lights, and other phasing and detour devices.
  - 7. Performance bond, labor and materials bond, insurance.
  - 8. Those items for all other work in the various items on the project site which must be performed or costs incurred prior to beginning work.
  - 9. This item also includes all work outside the limits of construction that is necessary to demobilize and restore areas disturbed by the Contractor to their original condition including, but not limited to, pavement rehabilitation, grading, seeding, mulching, cleaning, and disposal.

1.2 MEASUREMENT AND PAYMENT:

- A. All work covered by this section will be paid for at the contract lump sum price for "Mobilization."
- B. Should "Mobilization" exceed 5% of the total bid amount for the Contract, partial payments for the item of "Mobilization" will be made with the first and second partial pay estimates, paid on the Contract, and will be made at the rate of 50 percent of the lump sum price for "Mobilization" on each of these partial pay estimates, less retainage provided for in the Contract; the remaining amount over 5% shall be paid in the final pay request of the project. If the Mobilization bid amount does not exceed 5%, it shall be paid equally in the first two (2) partial pay estimates.
- C. Payment will be made per lump sum.

PART 2 PRODUCTS - Not Used.

PART 3 EXECUTION - Not Used.

END OF SECTION

SECTION 31 10 00  
SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Removing surface debris.
2. Removing designated paving, curbs, and slabs.
3. Removing designated trees, shrubs, and other plant life.
4. Removing abandoned utilities and structures where indicated.
5. Plugging abandoned utilities and filling abandoned structures where indicated.
6. Protecting plant life and structures designated to remain.

B. Related Sections:

1. Section 31 23 16 - Excavation and Fill: Topsoil and subsoil removal, proofrolling.
2. Section 32 91 19 – Landscape Grading.
3. Section 32 92 19 - Seeding.

1.2 REFERENCES

1.3 SCDOT Standard Specifications:

A. Standard Specifications for Highway Construction, latest edition, published by the South Carolina Department of Transportation.

1. South Carolina Department of Health and Environmental Control Storm Water Management Best Management Practices, latest edition, published by the South Carolina Department of Health and Environmental Control.

1.4 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Site Clearing:

1. Basis of Measurement: By acre.
2. Basis of Payment: Includes clearing site, loading, and removing waste materials from site, applying herbicide to designated plant life.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with SCDOT Section 201 of the Standard Specifications, latest edition.

B. Maintain one copy of document on site.

C. Conform to applicable code for environmental requirements and disposal of debris.

## PART 2 PRODUCTS – Not Used.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify existing plant life designated to remain is tagged or identified.
- C. Identify waste area or salvage area for placing removed materials when materials are indicated to remain on site.

### 3.2 PREPARATION

- A. Call Palmetto Utility Protection Services, Inc. (PUPS) and/or Local Utility Line Information service designated on Drawings three (3) working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
  - 2. Contractor will not perform work prior to the expiration of the mandatory period unless all utilities have been located.
- B. Notify affected utility companies before starting work and comply with utility's requirements.

### 3.3 PROTECTION

- A. Locate, identify, and protect from damage utilities indicated to remain.
- B. Protect trees, plant growth, and features designated to remain as final landscaping.
- C. Protect benchmarks and survey control points from damage or displacement.

### 3.4 CLEARING

- A. Remove trees and shrubs within areas indicated on Drawings.
- B. Remove stumps, main root ball, root system, surface rock, and pavements to depth of 12 inches below proposed Subgrade elevation.
- C. Clear undergrowth and deadwood without disturbing subsoil.

### 3.5 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Remove paving, curbs, and site slabs.

- C. Where indicated on Drawings partially remove paving, curbs, and slabs. Neatly saw cut edges at right angle to surface.
- D. Remove abandoned utilities. Indicate removal termination point for underground utilities on Record Documents.
- E. Continuously clean-up and remove waste materials from site. Do not allow materials to accumulate on site.
- F. Do not burn or bury materials on site unless authorized in writing by authority having jurisdiction.
- G. Leave site in clean condition.

END OF SECTION

SECTION 31 23 16  
EXCAVATION AND FILL

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating topsoil.
2. Excavating subsoil for buildings, pavements, and landscape.
3. Backfilling building perimeter to subgrade elevations.
4. Backfilling site structures to subgrade elevations.
5. Filling under pavements or slabs-on-grade.
6. Undercutting and filling over-excavation.
7. Disposal of excess material.

B. Related Sections:

1. Section 31 10 00 - Site Clearing: Clearing site prior to excavation.
2. Section 31 25 13 - Erosion Controls: Controlling sediment and erosion from Work of this section.
3. Section 31 23 16.13 - Trenching: Excavating and backfilling for utilities.
4. Section 32 91 19 - Landscape Grading: Finish grading with topsoil to contours.

1.2 UNIT PRICE – MEASUREMENT AND PAYMENT

- A. Work of this Section will not be measured for payment but is included in the unit cost for the various utilities and structures installed.

1.3 REFERENCES

A. SCDOT Standard Specifications:

1. Standard Specifications for Highway Construction, latest edition, published by the South Carolina Department of Transportation.

B. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

C. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

5. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
6. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
7. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

#### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Bypass pumping plan submittals as specified in the Section 33 32 40 – Bypass Pumping.
- C. Sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan.
- D. Dewatering Plan: Describe dewatering methods to be used to keep excavations dry if required.
- E. Samples: Submit, in air-tight containers, 10-pound sample of each type of fill to testing laboratory.
- F. Materials Source DOT Approval: Submit certification that aggregate, and soil material suppliers are approved by the South Carolina Department of Transportation.
- G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

#### 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with SCDOT Sections 104, 203, 205, 206, 211, 225, 230, 235 and 260 of Standard Specifications.
- B. Maintain one copy of document on site.
- C. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Project location.

## PART 2 PRODUCTS

### 2.1 MATERIALS

- A. Topsoil: Original surface soil typical of the area which is capable of supporting native plant growth. It shall be free of large stones, roots, waste, debris, contamination, or other unsuitable material which might hinder plant growth.
- B. Subsoil: Clean natural soil with a plasticity index of 15 or less that is free of clay, rock, or gravel lumps larger than two inches in any dimension, debris, waste, frozen material, and any other deleterious material that might cause settlement. Suitable material excavated from the site may be used as subsoil fill under optimum moisture conditions.
- C. Granular Fill: Clean sand, slightly silty sand, or slightly clayey sand having a Unified Soil Classification of SW, SP, SP-SM, or SP-SC.
- D. Structural Fill: Clean coarse aggregate Gradation No. 57 conforming to SCDOT Division 200 of Standard Specifications.
- E. Borrow Material: Conform to subsoil requirements.

### 2.2 ACCESSORIES

- A. Geotextile Fabric: Fabric conforming to Section 804 of the SCDOT Standard Specifications for Highway Construction, latest edition, for Class 1 Fabrics.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify survey benchmark and intended elevations for the Work are as indicated on Drawings.
- C. Verify subdrainage, damp proofing, or waterproofing installation has been inspected.
- D. Verify underground structures are anchored to their own foundations to avoid flotation after backfilling.
- E. Verify structural ability of unsupported walls to support loads imposed by fill.

### 3.2 PREPARATION FOR EXCAVATION

- A. Call Palmetto Utility Protection Services, Inc. (PUPS) and/or Local Utility Line Information service designated on Drawings three (3) working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.



2. Contractor will not perform work prior to the expiration of the mandatory period unless all utilities have been located.
- B. Notify affected utility companies before starting work and comply with utility's requirements.
- C. Identify required lines, levels, contours, and datum.
- D. Notify utility company to remove and relocate utilities.
- E. Protect utilities indicated to remain from damage.
- F. Protect plant life, lawns, rock outcropping, and other features remaining as portion of final landscaping.
- G. Protect benchmarks, survey control point, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

### 3.3 TOPSOIL EXCAVATION

- A. Excavate topsoil from areas to be further excavated, re-landscaped, or regraded without mixing with foreign materials for use in finish grading.
- B. Do not excavate wet topsoil.
- C. Stockpile in area designated on site and protect from erosion.
- D. Remove from site excess topsoil not intended for reuse.

### 3.4 SUBSOIL EXCAVATION

- A. Underpin adjacent structures which may be damaged by excavation work.
- B. Excavate subsoil to accommodate building foundations, structures, slabs-on-grade, paving, landscaping, and construction operations.
- C. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity.
- D. Slope banks with machine to angle of repose or less until shored.
- E. Do not interfere with 45-degree bearing splay of foundations.
- F. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- G. Trim excavation. Remove loose matter.
- H. Remove lumped subsoil, boulders, and rock up to 1/3 cubic yard measured by volume.
- I. Notify Owner or Owner Representative and testing agency of unexpected subsurface conditions.

- J. Correct areas over excavated with granular fill structural fill and compact as required for fill areas.
- K. Remove excess and unsuitable material from site.
- L. Repair or replace items indicated to remain damaged by excavation.
- M. Excavate subsoil from areas to be further excavated, re-landscaped, or regraded.
- N. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.
- O. When excavating through roots, perform Work by hand and cut roots with sharp axe.
- P. Remove from site excess subsoil not intended for reuse.
- Q. Benching Slopes: Horizontally bench existing slopes greater than 3:1 to key placed fill material into slope to provide firm bearing.
- R. Stability: Replace damaged or displaced subsoil as specified for fill.

### 3.5 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures, and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support excavations more than five feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be left in place as part of the completed Work, cut off minimum 18 inches below finished subgrade, or design sheeting and shoring to be removed at completion of excavation work.
- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing Work from settlement, water, or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

### 3.6 SURFACE WATER CONTROL

- A. Control and remove unanticipated water seepage into excavation.
- B. Provide ditches, berms, and other devices to divert and drain surface water from excavation area as specified in Section 31 25 13 – Erosion Controls.
- C. Divert surface water and seepage water within excavation areas into sumps or settling basins prior to pumping water into drainage channels and storm drains.

### 3.7 DEWATERING

- A. Design and provide dewatering system to permit Work to be completed on dry and stable subgrade.
- B. Operate dewatering system continuously until backfill is minimum two feet above normal ground water table elevation.
- C. When dewatering system cannot control water within excavation, notify Owner or Owner Representative and stop excavation work.
  - 1. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.
  - 2. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.
- D. Modify dewatering systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.
- E. Discharge ground water and seepage water within excavation areas into sumps or settling basins prior to pumping water into drainage channels and storm drains.
- F. Remove dewatering and surface water control systems after dewatering operations are discontinued.

### 3.8 PROOF ROLLING

- A. Proof roll areas to receive fill, pavement and building slabs to identify areas of soft yielding soils.
  - 1. Use loaded tandem-axle pneumatic tired dump truck or large smooth drum roller.
  - 2. Load equipment to make a minimum of four passes with two passes perpendicular to the others.
- B. Undercut such areas to firm soil, backfill with granular fill, structural fill, and compact to density equal to or greater than requirements for subsequent fill material.
- C. Do not proof roll or undercut until soil has been dewatered.

### 3.9 BACKFILLING

- A. Scarify subgrade surface to depth of four inches.
- B. Compact subgrade to density requirements for subsequent backfill materials.
- C. Backfill areas to contours and elevations with unfrozen materials.
- D. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

- E. Place fill material in continuous layers and compact in accordance with Schedule at end of this Section.
- F. Employ placement method that does not disturb or damage other work.
- G. Maintain optimum moisture content of backfill materials to attain required compaction density.
- H. Support foundation walls and structures prior to backfilling.
- I. Backfill simultaneously on each side of unsupported foundation walls and structures until supports are in place.
- J. Slope grade away from building minimum two percent slope for minimum distance of 10 feet, unless noted otherwise.
- K. Make gradual grade changes. Blend slope into level areas.
- L. Remove surplus backfill materials from site.

### 3.10 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top Surface of Backfilling Within Building and Paved Areas: Plus or minus one inch from required elevations.
- C. Top Surface of Backfilling Within Landscape Areas: Plus or minus two inches from required elevations.

### 3.11 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
- C. Protect structures, utilities, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth operations.
- D. Repair or replace items indicated to remain damaged by excavation or filling.

### 3.12 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Independent laboratory, field inspecting, testing, adjusting, and balancing.
- B. Request visual inspection of bearing surfaces by Owner or Owner Representative and inspection agency before installing subsequent work.
- C. Laboratory Material Tests: In accordance with ASTM D698.

- D. In-Place Compaction Tests: In accordance with the following:
  - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D6938.
  - 2. Moisture Tests: ASTM D6938.
  
- E. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.
  
- F. Frequency of Tests:
  - 1. Building and Pavement Areas: Two (2) times per lift for every 2,500 square feet.
  - 2. Landscape Areas: Two (2) times per lift for every 2,500 square feet.

END OF SECTION

SECTION 31 23 16.13  
TRENCHING

1.1 SUMMARY

A. Section Includes:

1. Excavating trenches for utilities and utility structures.
2. Bedding.
3. Backfilling and compacting to subgrade elevations.
4. Sheeting and Shoring.
5. Dewatering.
6. Compacting backfill material.

B. Related Sections:

1. Section 31 23 16 - Excavation and Fill: Topsoil and subsoil removal from site surface.
2. Section 31 25 13 - Erosion Controls: Controlling sediment and erosion from Work of this section.
3. Section 33 31 00 - Sanitary Sewerage Piping: Sanitary sewer piping and bedding.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. General: Work of this Section will not be measured for payment but is included in the unit cost for the various utilities and structures installed.

B. Trench Excavation: Will not be measured for payment.

C. Bedding: Will not be measured for payment.

D. Subsoil Fill: Will not be measured for payment.

E. Foundation Stone:

1. Basis of Measurement: By cubic yard to maximum trench width of 24 inches wider than outside diameter of pipe and maximum depth of 8 inches below bottom of pipe.
2. Basis of Payment: Includes furnishing fill material, stockpiling, preparing substrate surface, placing, and compacting.

F. Granular Fill:

1. Basis of Measurement: By cubic yard to maximum trench width of 24 inches wider than outside diameter of pipe and maximum depth of 8 inches below bottom of pipe.
2. Basis of Payment: Includes furnishing fill material, stockpiling, preparing substrate surface, placing, and compacting.

G. Concrete Fill:

1. Basis of Measurement: By cubic yard to maximum trench width of 24 inches wider than outside diameter of pipe and maximum depth of 8 inches below bottom of pipe.
2. Basis of Payment: Includes furnishing materials, forming, mixing and placing, and curing.

H. Sheeting and Shoring: Will not be measured for payment.

I. Dewatering: Will not be measured for payment.

### 1.3 REFERENCES

A. American Association of State Highway and Transportation Officials:

1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

B. ASTM International:

1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>)).
2. ASTM D1556 - Standard Test Method for Density of Soil in Place by the Sand-Cone Method.
3. ASTM D1557 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>)).
4. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
5. ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
6. ASTM D6938 – Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

C. SCDOT Standard Specifications:

1. Standard Specifications for Highway Construction, latest edition, published by the South Carolina Department of Transportation.

### 1.4 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, or cable.

B. Utility Structures: Manholes, catch basins, inlets, valve vaults, hand holes, and other utility access structures as indicated on Drawings.

C. Trench Terminology:

1. Foundation: Area under bottom of trench supporting bedding.
2. Bedding: Fill placed under utility pipe.
3. Haunching: Fill placed from bedding to center line of pipe.
4. Initial Backfill: Fill placed from center line to 6 to 12 inches above top of pipe.
5. Final Backfill: Fill placed from initial backfill to subgrade.

### 1.5 UNIFIED SOIL CLASSIFICATION SYSTEM

A. Class I

1. ¼” – 1-1/2” well graded stone including coral, slag, cinders, crushed stone and crushed shells.

B. Class II

1. GW Coarse gravel well graded stone and crushed shells
2. GP Coarse gravel poorly graded

- 3. SW Coarse sands well graded
  - 4. SP Coarse sands poorly graded
- C. Class III
- 1. GM Silty-sandy gravel
  - 2. GC Clayey-sandy gravel
  - 3. SM Silty-sands
  - 4. SC Clayey-sands
- D. Class IV
- 1. ML Inorganic silts and fine sands
  - 2. CL Inorganic clays – low plasticity
- E. Fill material shall exhibit a plasticity index of less than 20 and Standard Proctor maximum density at optimum moisture greater than 90 pounds per cubic foot. The following materials are unacceptable.
- F. Class V
- 1. OL Organic silts
  - 2. OH Organic clays
  - 3. PT Highly organic soil
  - 4. MH Inorganic elastic silts
  - 5. CH Inorganic clays – high plasticity

## 1.6 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Excavation Protection Plan: Describe sheeting, shoring, and bracing materials and installation required to protect excavations and adjacent structures and property; include structural calculations to support plan. Prepare excavation protection plan under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of South Carolina.
- C. Dewatering Plan if required: Describe methods of dewatering and disposal of water.
- D. Product Data: Submit data for geotextile fabric indicating fabric and construction.
- E. Samples: Submit to testing laboratory, in air-tight containers, 10-pound sample of each type of fill.
- F. Materials Source: Submit name of imported fill material suppliers.
- G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

## 1.7 QUALITY ASSURANCE

- A. Perform Work in accordance with Division 200 of SCDOT Standard Specifications.



B. Maintain one copy of document on site.

## 1.8 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

## 1.9 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

## PART 2 PRODUCTS

### 2.1 BACKFILL MATERIALS

A. Subsoil Fill: Class II, III, or IV - Clean natural soil with a plasticity index of 15 or less that is free of clay, rock, or gravel lumps larger than 2 inches in any dimension; debris; waste; frozen material; and any other deleterious material that might cause settlement. Suitable material excavated from the site may be used as subsoil fill under optimum moisture conditions.

B. Granular Fill: Class II, III - Clean sand, slightly silty sand, or slightly clayey sand having a Unified Soil Classification of SW, SP, SP-SM or SP-SC.

C. Foundation Stone: Class I - Clean coarse aggregate Gradation No. 57 conforming to Division 200 of SCDOT Standard Specifications for Highway Construction, latest edition.

D. Bedding and Haunching Material:  
1. Rigid Pipe: Granular Fill.  
2. Flexible Pipe: Foundation Stone.

E. Bedding for Structures: Foundation Stone.

F. Initial Backfill to 6 inches Minimum Above Utility:  
1. Rigid Pipe: Subsoil Fill.  
2. Flexible Pipe: Foundation Stone.

G. Final Backfill to Subgrade:  
1. Under Pavement: Granular Fill.  
2. Under Landscape: Subsoil Fill.

### 2.2 ACCESSORIES

A. Geotextile Fabric: Fabric conforming to Section 804 of the SCDOT Standard Specifications for Highway Construction, latest edition, for Class 1 Fabrics.

- B. Concrete: Class A Concrete conforming to Section 701 of the SCDOT Standard Specifications for Highway Construction, latest edition.
  - 1. Compressive strength of 3,000 psi at 28 days.
  - 2. Air entrained.
  - 3. Water cement ratio of 0.488 with rounded aggregate and 0.532 with angular aggregate.
  - 4. Maximum slump of 3.5 inches for vibrated concrete and 4 inches for non-vibrated concrete.
  - 5. Minimum cement content of 564 lbs per cubic yard for vibrated and 602 lbs. per cubic yard for non-vibrated concrete.

## PART 3 EXECUTION

### 3.1 PREPARATION

- A. Call local utility line information service indicated on Drawings not less than three working days before performing Work.
  - 1. Request underground utilities to be located and marked within and surrounding construction areas.
  - 2. Contractor will not perform work prior to the expiration of the mandatory period unless all utilities have been located.
- B. Notify affected utility companies before starting work and comply with utility's requirements.
- C. Identify required lines, levels, contours, and datum locations.
- D. Protect plant life, lawns, rock outcropping, and other features remaining as portion of final landscaping.
- E. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- F. Maintain and protect above and below grade utilities indicated to remain.
- G. Establish temporary traffic control and detours when trenching is performed in public right-of-way. Relocate controls and reroute traffic as required during progress of Work.

### 3.2 LINES AND GRADES

- A. Excavate to lines and grades indicated on Drawings.
  - 1. Owner reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.

### 3.3 TRENCHING

- A. Excavate subsoil required for utilities.

- B. Remove lumped subsoil, boulders, and rock up of 1/3 cubic yard, measured by volume.
- C. Perform excavation within 48 inches of existing utility service in accordance with utility's requirements.
- D. Do not advance open trench more than 200 feet ahead of installed pipe.
- E. Remove water or materials that interfere with Work.
- F. Trench Width: Excavate bottom of trenches maximum 16 inches wider than outside diameter of pipe or as indicated on Drawings.
- G. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and pipe.
- H. Maintain vertical faces to an elevation equal to 12 inches above top of pipe.
  - 1. When Project conditions permit, side walls may be sloped or benched above this elevation.
  - 2. When side walls cannot be sloped, provide sheeting and shoring to protect excavation as specified in this Section.
- I. Support Utilities and Structures:
  - 1. Keep trench width at top of trench to practical minimum to protect adjacent or crossing utility lines
  - 2. Support utilities crossing trench by means acceptable to utility company.
  - 3. Do not interfere with 45-degree bearing splay of foundations.
  - 4. Provide temporary support for structures above and below ground.
- J. When subsurface materials at bottom of trench are loose or soft, excavate to firm subgrade or to depth directed by Owner or Owner Representative.
  - 1. Cut out soft areas of subgrade not capable of compaction in place.
  - 2. Backfill with foundation stone and compact to density equal to or greater than requirements for subsequent backfill material.
- K. Trim Excavation: Hand trim for bell and spigot pipe joints where required. Remove loose matter.
- L. Correct areas over excavated areas with compacted backfill as specified for authorized excavation or replace with fill concrete as directed by Owner or Owner Representative.
- M. Place geotextile fabric over trench foundation stone prior to placing subsequent bedding materials.

### 3.4 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures, and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.
- B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

- C. Design sheeting and shoring to be removed at completion of excavation work unless approved by Owner or Owner Representative.
- D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing Work from settlement, water, or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

### 3.5 SURFACE WATER CONTROL

- A. Control and remove unanticipated water seepage into excavation.
- B. Provide ditches, berms, and other devices to divert and drain surface water from excavation area as specified in Section 31 25 13 – Erosion Controls.
- C. Divert surface water and seepage water within excavation areas into sumps or settling basins prior to pumping water into drainage channels and storm drains.

### 3.6 DEWATERING

- A. Design and provide dewatering system to permit Work to be completed on dry and stable subgrade.
- B. Operate dewatering system continuously until backfill is minimum 2 feet above normal ground water table elevation.
- C. When dewatering system cannot control water within excavation, notify Owner or Owner Representative and stop excavation work.
  - 1. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.
  - 2. Demonstrate dewatering system operation complies with performance requirements before resuming excavation operations.
- D. Modify dewatering systems when operation causes or threatens to cause damage to new construction, existing site improvements, adjacent property, or adjacent water wells.
- E. Discharge ground water and seepage water within excavation areas into sumps or settling basins prior to pumping water into drainage channels and storm drains.
- F. Remove dewatering and surface water control systems after dewatering operations are discontinued.

### 3.7 BEDDING, HAUNCHING, AND INITIAL BACKFILL

- A. Place bedding full width of trench to the depth indicated on Drawings. Excavate for pipe bells.
- B. Install utility pipe and conduit in accordance with the respective utility section.

- C. Support pipe uniformly along entire length of pipe.
- D. Carefully place haunching material to center of pipe, rod and tamp material to fill voids and provide uniform support of pipe haunches.
- E. Carefully place initial backfill to 6 inches above top of pipe or to depth indicated on Drawings.
- F. Compact as indicated on the drawings.

### 3.8 FINAL BACKFILLING TO SUBGRADE

- A. Backfill trenches to contours and elevations with unfrozen fill materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Place fill material in continuous layers and compact in accordance with schedule at end of this Section.
- D. Employ placement method that does not disturb or damage utilities in trench or foundation perimeter drainage.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Do not leave more than 50 feet of trench open at end of working day.
- G. Protect open trench to prevent danger to the public.

### 3.9 DISPOSAL OF EXCESS MATERIAL

- A. Dispose of excess material offsite and legally.
- B. Furnish Owner or Owner Representative with certificate of disposal site or agreement from private property owner.

### 3.10 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top Surface of Backfilling: Plus or minus 1 inch from required elevations.

### 3.11 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform laboratory material tests in accordance with ASTM D1557 or AASHTO T180.
- C. Perform in place compaction tests in accordance with the following:
  - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D6938.
  - 2. Moisture Tests: ASTM D6938.

- D. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.
- E. Frequency of Tests:
  - 1. One tests per lift for every 20 feet of trench for point repairs.
  - 2. Two tests per lift for every 100 feet for pipe replacement.
  - 3. Immediately adjacent for the connecting manholes.

### 3.12 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Protecting finished work.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.

### 3.13 SCHEDULE OF COMPACTION

- A. Under Pavement and Slabs:
  - 1. Granular Fill in maximum 8-inch loose lifts.
  - 2. Compact to minimum 95 percent maximum density except the top 12 inches.
  - 3. Compact top 12 inches to minimum 98 percent maximum density.
- B. Under Landscape Areas:
  - 1. Subsoil Fill in maximum 8-inch loose lifts.
  - 2. Compact to minimum 90 percent maximum density.
- C. In Unstable or Unsuitable Trench Foundation Areas:
  - 1. Foundation Stone in maximum 12-inch loose lifts.
  - 2. Compact to 98 percent maximum density.

END OF SECTION

SECTION 31 23 19  
DEWATERING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Dewatering system.
2. Surface water control system.
3. Water disposal.

B. Related Requirements:

1. Section 31 23 16 – Excavation and Fill: Excavation for structures below ground water table.
2. Section 31 23 16.13 - Trenching: Trenching for utilities below ground water table.
3. Section 31 25 00 - Erosion and Sedimentation Controls: Surface water runoff control.

1.2 DEFINITIONS

A. Dewatering:

1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering excavations, and trenches.
2. Reducing piezometric pressure within strata to prevent failure or heaving of excavations, and trenches.
3. Disposing of removed water.

B. Piezometer: A tube inserted into a vessel or pipe to indicate the height (pressure) that a liquid can rise in the tube.

C. Pitometer: A measuring device that transforms a differential pressure into an electrical output current proportional to the flow rate.

D. Surface Water Control: The removal of surface water within open excavations.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

Work of this Section will not be measured for payment but is included in the unit cost of for the various utilities and structures installed.

1.4 REFERENCE STANDARDS

ASTM International:

1. ASTM C33/C33M - Standard Specification for Concrete Aggregates.

## 1.5 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Coordinate Work of this Section to permit following construction operations to be completed on dry and stable substrate:
  - 1. Excavation for structures as specified in Section 31 23 16 - Excavation.
  - 2. Trenching for utilities as specified in Section 31 23 16.13 - Trenching.

## 1.6 PREINSTALLATION MEETINGS

- A. Section 01 30 00 - Administrative Requirements: Requirements for preinstallation meeting.

## 1.7 SEQUENCING

- A. Section 01 10 00 - Summary: Requirements for sequencing.
- B. Sequence Work of this Section to obtain required permits before start of dewatering operations.
- C. Sequence Work of this Section to install and test monitoring systems minimum seven (7) days before testing and operating dewatering systems.
- D. Sequence Work of this Section to install and test dewatering and surface water control systems minimum seven (7) days before starting excavation, trenching.

## 1.8 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures.
- B. Product Data:
  - 1. Submit sizes, capacities, priming method, and engine motor characteristics for dewatering pumps.
  - 2. Submit pumping equipment for control of surface water within excavation.
- C. Shop Drawings:
  - 1. Include plans, elevations, sections, and details.
  - 2. Show arrangement, locations, and details of wells and well points; location of risers, headers, filters, pumps, power units, and discharge lines; and means of discharge, control of sediment, and disposal of water.
  - 3. Include layouts of piezometers and flow-measuring devices for monitoring performance of dewatering system.
  - 4. Include written plan for dewatering operations including sequence of well and well point placements coordinated with excavation shoring and bracings and control procedures to be adopted if dewatering problems arise.
- D. Delegated Design Submittals:
  - 1. Submit signed and sealed Shop Drawings.
  - 2. Indicate design values, analyses, assumptions, and calculations to support design.
  - 3. Include description and profile of geology, soil, and ground water conditions.



4. Using photographs, show existing conditions of adjacent construction and site improvements that might be misconstrued as damage caused by dewatering operations. Submit before Work begins.
- E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections, and testing and monitoring reports.
  - F. Qualifications Statements:
    1. Submit qualifications for manufacturer, installer, and licensed professional.
  - G. Record Drawings: Identify locations and depths of capped wells and well points and other abandoned-in-place dewatering equipment.
- 1.9 CLOSEOUT SUBMITTALS
- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
  - B. Project Record Documents: Record actual locations and depths of capped wells and piping abandoned in place.
- 1.10 QUALITY ASSURANCE
- A. Perform Work according to South Carolina Department of Health and Environmental Control (SCDHEC) standards.
- 1.11 QUALIFICATIONS
- A. Installer: An experience installer that has specialized in dewatering work.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE AND DESIGN CRITERIA

- A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
  1. Design dewatering system, including comprehensive engineering analysis by a qualified professional engineer.
  2. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, prevention of flooding in excavation, and prevention of damage to subgrades and permanent structures.
  3. Prevent surface water from entering excavations by grading, dikes, or other means.
  4. Accomplish dewatering without damaging existing building, structures, and site improvements adjacent to excavation.
  5. Remove dewatering system when no longer required for construction unless otherwise directed by Owner/Engineer.
  6. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with water-and-debris-disposal regulations of authorities having jurisdiction.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Utility Service Locator:
  - 1. Call local utility service-line information at 811 not less than [**three**] 3 working days before performing Work.
  - 2. Request that underground utilities be located and marked within and immediately surrounding **construction areas**.
  - 3. Identify required lines, levels, contours, and data.

### 3.2 PREPARATION

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Protect existing adjacent buildings, structures, and improvements from damage that may be caused by dewatering operations.

### 3.3 MONITORING WELLS

- A. Install monitoring wells at locations as indicated on Shop Drawings.
- B. Test each monitoring well point to verify that installation is performing properly.
- C. Install, calibrate, and test piezometers for proper operation.
- D. Maintain accessibility to monitoring wells continuously during construction operations.
- E. Maintain monitoring wells until groundwater is allowed to return to normal level.

### 3.4 DEWATERING SYSTEM

- A. Install dewatering system utilizing wells, well points, or similar methods complete with pump equipment, standby power and pumps, filter material gradation, valves, appurtenances, water disposal, and surface-water controls.
  - 1. Space well points or wells at intervals required to provide sufficient dewatering.
  - 2. Use filters or other means to prevent pumping of fine sands or silts from the subsurface.

- B. Place dewatering system into operation to lower water to specified levels before excavating below ground-water level.
- C. Provide sumps, sedimentation tanks, and other flow-control devices as required by authorities having jurisdiction.
- D. Provide standby equipment on-site, installed and available for immediate operation, to maintain dewatering on continuous basis if any part of system becomes inadequate or fails.

### 3.5 OPERATION

- A. Earth Excavation: Earth excavation shall include all substances to be excavated other than rock. Earth excavation for structures shall be to limits not less than two feet outside wall lines, to allow for formwork and inspection, and further as necessary to permit the trades to install their work. All materials loosened or disturbed by excavation shall be removed from surfaces to receive concrete or graded aggregate. A. Operate system continuously until drains, sewers, and structures have been constructed and fill materials have been placed or until dewatering is no longer required.
- B. Operate system to lower and control ground water to permit excavation, construction of structures, and placement of fill materials on dry subgrades. Drain water-bearing strata above and below bottom of foundations, drains, sewers, and other excavations.
  1. Do not permit open-sump pumping that leads to loss of fines, soil piping, subgrade softening, and slope instability.
  2. Reduce hydrostatic head in water-bearing strata below subgrade elevations of foundations, drains, sewers, and other excavations.
  3. Maintain piezometric water level a minimum of 24 inches below bottom of excavation.
- C. Dispose of water and sediment removed in conformance with the Manual for Erosion Control and Sediment Control in Georgia. Dispose of water removed by dewatering in a manner that avoids endangering public health, property, and portions of work under construction or completed. Dispose of water and sediment in a manner that avoids inconvenience to others.
- D. Remove Dewatering system from Project site on completion of dewatering if required. Plug or fill well holes with sand or cut off and cap wells a minimum of 36 inches below overlying construction.

### 3.6 FIELD QUALITY CONTROL

- A. Observation Wells: Provide observation wells or piezometers, take measurements, and maintain at least the minimum number indicated; additional observation wells may be required by authorities having jurisdiction.
  1. Observe and record daily elevation of ground water and piezometric water levels in observation wells.
  2. Repair or replace, within 24 hours, observation wells that become inactive, damaged, or destroyed. In areas where observation wells are not functioning properly, suspend construction activities until reliable observations can be made. Add or remove water from observation-well risers to demonstrate that observation wells are functioning properly.
  3. Fill observation wells, remove piezometers, and fill holes when dewatering is completed.

- B. Survey-Work Benchmarks: Resurvey benchmarks regularly during dewatering and maintain an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Owner or Owner Representative if changes in elevations occur or if cracks, sags, or other damage is evident in adjacent construction.
- C. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.
- D. Prepare reports of observations.

### 3.7 PROTECTION

- A. Protect and maintain dewatering system during dewatering operations.
- B. Promptly repair damages to adjacent facilities caused by dewatering.
  - 1. Dispose of stripping that are unsuitable for topsoil or that exceed quantity required for topsoil offsite.
  - 2. Stockpile topsoil in sufficient quantity to meet project needs. Dispose of excess stripping as specified in Site Clearing.

END OF SECTION

SECTION 31 25 00  
EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Diversion Channels.
  - 2. Rock Energy Dissipator.
  - 3. Paved Energy Dissipator.
  - 4. Rock Basin.
  - 5. Rock Barriers.
  - 6. Sediment Ponds.
  - 7. Sediment Traps.
  
- B. Related Sections:
  - 1. Section 31 10 00 - Site Clearing.
  - 2. Section 31 23 16 – Excavation and Fill.
  - 3. Section 32 91 19 - Landscape Grading.
  - 4. Section 32 92 19 - Seeding.
  - 5. Section 33 31 00 – Sanitary Sewerage piping.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Basis of Payment: Lump sum

1.3 REFERENCES

- A. SCDOT Standard Specifications:
  - 1. Standard Specifications for Highway Construction, 2007 or latest version, published by the South Carolina Department of Transportation.
  
- B. SCDHEC Best Management Practices:
  - 1. SCDHEC Storm Water Management BMP Handbook, latest edition, published by the South Carolina Department of Health and Environmental Control.
  - 2. "South Carolina Storm Water Management and Sedimentation Control Handbook for Land Disturbance Activities", August 2003 or latest edition.
  
- C. American Concrete Institute:
  - 1. ACI 301 - Specifications for Structural Concrete.
  
- D. ASTM International:
  - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>).
  - 2. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
  - 3. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

#### 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures.
- B. Product Data: Product Data: Submit data on silt fences, posts, geotextile fabrics, woven wire, rip rap, construction entrance/exit stone.
- C. Manufacturer's Certificate: Certify products and aggregates meet or exceed specified requirements.
- D. Submit letter of exemption that NPDES coverage is not required from SCDHEC under the Sites disturbing less than 1-Acre category.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

#### 1.6 QUALITY ASSURANCE

- A. Perform Work according to South Carolina Department of Transportation standards.
- B. Maintain one (1) copy of document on site.

### PART 2 - PRODUCTS

#### 2.1 GEOTEXTILE MATERIALS

- A. Engineering Fabric Materials: Non-biodegradable conforming to Section 815 of SCDOT Standard Specifications:
  - 1. Silt Fence: Type 3, Class A or B Engineering Fabric.
  - 2. Under Rip Rap or Construction Entrances: Type 2 Engineering Fabric.

#### 2.2 STONE, AGGREGATE, AND SOIL MATERIALS

- A. Aggregate for Construction Entrance: Coarse aggregate, Gradation No. 1 or larger with an average size of 2" - 3", conforming to the SCDOT Standard Specifications.
- B. Stone for Sediment Trap and Check Dam: Class B erosion control stone conforming to Division 800 of the SCDOT Standard Specifications. Minimum size 5", mid-range size 9", and maximum size 16" equally distributed.
- C. Stone for Rip Rap Apron: Class A erosion control stone conforming to Division 800 of the SCDOT Standard Specifications.
- D. Stone for Rock Pipe Inlet Protection: Class B erosion control stone conforming to Division 800 of the SCDOT Standard Specification. No 5 or No. 57 washed stone conforming to Division 800 of the SCDOT Standard Specifications as shown on detail in construction drawings.
- E. Soil Fill: Clean natural soil with a plasticity index of 15 or less that is free of clay, rock, or gravel lumps larger than 2" in any dimension; debris; waste; frozen material; and any other

deleterious material that might cause settlement. Suitable material excavated from the site may be used as soil fill under optimum moisture conditions.

### 2.3 PLANTING MATERIALS

- A. General: Conform to SCDOT Standard Specifications in Section 810.
- B. Temporary Seed Mixture: Conform to SCDOT Standard Specifications.
- C. Fertilizer: Conform to SCDOT Standard Specifications.
- D. Lime: Conform to SCDOT Standard Specifications.
- E. Mulch: Conform to SCDOT Standard Specifications.

### 2.4 ACCESSORIES

- A. Posts for Silt Fence and Inlet Protection: Steel posts 4'-0" long, 1-3/8" wide, minimum weight 1.25 lbs/ft. conforming to Section 815 of SCDOT Standard Specifications.
- B. Woven Wire Fence for Silt Fence: Minimum 32" high, minimum 5 horizontal wires, vertical wires spaced 12" apart, minimum 10-gauge top and bottom wires, and minimum 12-1/2 gauge.
- C. Attachment Devices for Silt Fence: No. 9 staple, minimum 1-1/2" long, or other approved attachment devices.
- D. Hardware Cloth for Inlet Protection: 23 gauge, 1/4" mesh opening hardware cloth.

### 2.5 SOURCE QUALITY CONTROL (AND TESTS)

- A. Perform tests on cement, aggregates, and mixes to ensure conformance with specified requirements.
- B. Make rock available for inspection at producer's quarry prior to shipment. Notify Owner or Owner Representative at least seven (7) days before inspection is allowed.
- C. Allow witnessing of inspections and tests at manufacturer's test facility. Notify Owner or Owner Representative at least seven (7) days before inspections and tests are scheduled.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support devices and imposed loads.
- B. Verify gradients and elevations of base or foundation for other Work are correct.

### 3.2 SILT FENCE

- A. Install according to the Section 815 of South Carolina Department of Transportation Standards.

- B. Use wire fence with fabric that conforms to the South Carolina Department of Transportation Standards.

### 3.3 TEMPORARY CONSTRUCTION ENTRANCES

- A. Excavate and compact subgrade as specified in Section 31 23 16.16 – Excavation and Fill.
- B. Construction entrances to be provided at all locations where construction traffic accesses paved roadway.
- C. Mound aggregate near intersection with public road to prevent site runoff entering road.
- D. Periodically dress entrances with 2" thick coarse aggregate when aggregate becomes clogged with soil.

### 3.4 INLET PROTECTION

- A. Type "F" inlet tube (wattle) per South Carolina Department of Transportation Standards.

### 3.5 DIVERSION CHANNELS

- A. Windrow excavated material on low side of channel.
- B. Compact to 95 percent maximum density.
- C. On entire channel area, apply soil supplements and sow seed as specified in Section 32 91 13 and Section 32 92 19.
- D. Install Work according to South Carolina Department of Transportation standards.

### 3.6 ROCK BARRIER

- A. Determine length required for ditch or depression slope and excavate, compact and foundation area to firm, even surface.
- B. Produce an even distribution of rock pieces, with minimum voids to the indicated shape, height and slope.
- C. Construct coarse aggregate filter blanket against upstream face of rock barrier to the indicated thickness.
- D. Install Work according to South Carolina Department of Transportation standards.

### 3.7 SITE STABILIZATION

- A. Incorporate erosion control devices indicated on the Drawings into the Project at the earliest practicable time.
- B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.



- C. Stockpile and waste pile heights shall not exceed 35 feet. Slope stockpile sides at 2: 1 or flatter.
- D. Stabilize any disturbed area of affected erosion control devices on which activity has ceased and which will remain exposed for more than 20 days.
  - 1. During non-germinating periods, apply mulch at recommended rates.
  - 2. Stabilize disturbed areas which are not at finished grade and which will be disturbed within one year with temporary grassing specifications.
  - 3. Stabilize disturbed areas which are either at finished grade or will not be disturbed within one year with permanent seeding specifications.
- E. Stabilize diversion channels, sediment traps, and stockpiles immediately.

### 3.8 FIELD QUALITY CONTROL

- A. Inspect erosion control devices on a weekly basis and after each runoff event. Make necessary repairs to ensure erosion and sediment controls are in good working order.
- B. Perform laboratory material tests in accordance with ASTM D698
- C. Perform in place compaction tests in accordance with the following:
  - 1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
  - 2. Moisture Tests: ASTM D3017.
- D. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.
- E. Frequency of Compaction Testing: Twice for each lift for every 500 square feet.

### 3.9 CLEANING

- A. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment structure or device, remove and dispose of sediment.
- B. Do not damage structure or device during cleaning operations.
- C. Do not permit sediment to erode into construction or site areas or natural waterways.
- D. Clean channels when depth of sediment reaches approximately one-half channel depth.

END OF SECTION

SECTION 32 91 19  
LANDSCAPE GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Final grade topsoil for finish landscaping.
2. Testing Topsoil.
3. Supplying Topsoil.
4. Scarifying substrate surface.
5. Placing and lightly compacting topsoil.
6. Removing excess topsoil from site.

B. Related Sections:

1. Section 31 23 16 - Excavation and Fill: Cutting and filling to site subgrade.
2. Section 31 23 16.13 - Trenching: Backfilling trenches to subgrade.
3. Section 32 92 19 - Seeding.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Topsoil:

1. Basis of Measurement: By acre.
2. Basis of Payment: Includes supplying topsoil materials, stockpiling, preparing and scarifying substrate surface, placing where required, and rolling.

1.3 REFERENCES

A. SCDOT Standard Specifications:

1. Standard Specifications for Highway Construction, latest edition, published by the South Carolina Department of Transportation.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Test Results: Submit results of topsoil tests to determine soil amendments required.

C. Samples: Submit to testing laboratory for independent test, in air-tight containers, 10 pound sample of topsoil.

D. Materials Source: Submit name and location of imported materials source.

1.5 QUALITY ASSURANCE

A. Furnish each topsoil material from single source throughout the Work.

- B. Perform Work in accordance with applicable portions SCDOT Standard Specifications for Highway Construction, latest edition, published by SC Department of Transportation.
- C. Maintain one copy on site.

## PART 2 PRODUCTS

### 2.1 MATERIAL

- A. Topsoil: Original surface soil typical of the area, which is capable of supporting native plant growth; free of large stones, roots, waste, debris, contamination, or other unsuitable material, which may be detrimental to plant growth; pH value of 5.4 to 7.0.
- B. Suitable material excavated from site, amended per requirements of tests is acceptable.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify building and trench backfilling have been inspected.
- C. Verify substrate base has been contoured and compacted.

### 3.2 PREPARATION

- A. Protect landscaping and other features remaining as final Work.
- B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

### 3.3 SUBSTRATE PREPARATION

- A. Eliminate uneven areas and low spots.
- B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove contaminated subsoil.
- C. Scarify surface to depth of 6 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

### 3.4 PLACING TOPSOIL

- A. Place topsoil in areas where seeding, sodding, and planting is required to thickness as scheduled. Place topsoil during dry weather.
- B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.

- C. Remove roots, weeds, rocks, and foreign material while spreading.
- D. Manually spread topsoil close to plant material, buildings, and pavement to prevent damage.
- E. Lightly compact placed topsoil.
- F. Remove surplus subsoil and topsoil from site.
- G. Leave stockpile area and site clean and raked, ready to receive landscaping.

### 3.5 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Top of Topsoil: Plus or minus 1/2 inch.

### 3.6 PROTECTION OF INSTALLED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Prohibit construction traffic over topsoil. Scarify and regrade disturbed areas.

### 3.7 SCHEDULES

- A. Compacted topsoil thicknesses:
  - 1. Seeded Areas: 6 inches.

END OF SECTION

SECTION 32 92 19  
SEEDING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Fertilizing.
  - 2. Seeding.
  - 3. Hydroseeding.
  - 4. Mulching.
  - 5. Maintenance.
  
- B. Related Sections:
  - 1. Section 32 84 00 - Planting Irrigation: Irrigation system for seeded areas.
  - 2. Section 32 91 19 - Landscape Grading: Preparation and placement of topsoil in preparation for the Work of this Section.
  - 3. Section 32 92 23 - Sodding.
  - 4. Section 32 93 00 - Plants.

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Seeding:
  - 1. Basis of Measurement: By square yard.
  - 2. Basis of Payment: Includes fertilizing, seeding, watering, mowing, and maintenance to specified time limit.

1.3 REFERENCES

- A. ASTM International:
  - 1. ASTM C602 - Standard Specification for Agricultural Liming Materials.
  
- B. SCDOT Standard Specifications:
  - 1. Standard Specifications for Highway Construction, latest edition, published by the South Carolina Department of Transportation.

1.4 DEFINITIONS

- A. Weeds: Vegetative species other than specified species to be established in given area.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

- B. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.
- C. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and application rates.
- D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- E. Invoices or proof of purchase to verify quantities specified.
- F. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; and, types, application frequency, and recommended coverage of fertilizer.

#### 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with SCDOT, latest edition for Highway Construction, published by SC Department of Transportation Standard Specifications.
- B. Maintain copy of document on site.

#### 1.7 QUALIFICATIONS

- A. Seed Supplier: Company specializing in manufacturing products specified in this Section with minimum 3 years documented experience.
- B. Installer: Company specializing in performing work of this Section with minimum 5 years documented experience.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver grass seed mixture in sealed containers showing percentage of seed mix, germination, inert matter and weeds; year of production; net weight; date of packaging; and location of packaging. Seed in damaged packaging is not acceptable.
- B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

#### 1.9 MAINTENANCE SERVICE

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance service.
- B. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition for minimum of three cuttings.

## PART 2 PRODUCTS

### 2.1 TOPSOIL MATERIALS

- A. Conform to Section 32 91 19 - Landscape Grading. Original surface soil typical of the area, which is capable of supporting native plant growth; free of large stones, roots, waste, debris, contamination, or other unsuitable material, which may be detrimental to plant growth; pH value of 5.4 to 7.0.

### 2.2 SEED MIXTURE

- A. Furnish materials in accordance with South Carolina Board of Agriculture rules and regulations as specified in SCDOT Standard Specifications for Highway Construction, latest edition, published by the SC Department of Transportation.
- B. Seed Mixture and Rate:
- Upper State:

Tall fescue (KY-31)	75 lbs/acre
Kentucky blue grass	10 lbs/acre
Sericea lespedeza	50 lbs/acre
Korean lespedeza	15 lbs/acre

- Lower State:

Carpet Grass	10 lbs/acre
Sericea lespedeza	50 lbs/acre
Kobe lespedeza	15 lbs/acre

### 2.3 ACCESSORIES

- A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.
- B. Fertilizer: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis. When test is not available, use 10-10-10 mixture of Nitrogen, phosphoric acid, and soluble potash.
- C. Lime: ASTM C602, Class T or Class O agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.
- D. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.
- E. Erosion Fabric: Jute matting, open weave.
- F. Herbicide: As required to combat type of weeds encountered.

G. Stakes: Softwood lumber, chisel pointed.

H. String: Inorganic fiber.

### PART 3 EXECUTION

#### 3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting Work.

B. Verify prepared soil base and topsoil are ready to receive the Work of this Section.

#### 3.2 FERTILIZING

A. Apply lime at application rate recommended by soil analysis. Work lime into top 6 inches of soil.

B. Apply fertilizer at application rate recommended by soil analysis.

C. Apply after smooth raking of topsoil and prior to roller compaction.

D. Do not apply fertilizer at same time or with same machine used to apply seed.

E. Mix fertilizer thoroughly into upper 2 inches of topsoil.

F. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

#### 3.3 SEEDING

A. Apply seed evenly in two intersecting directions at the rates shown above. Rake in lightly.

B. Do not seed areas in excess of that which can be mulched on same day.

C. Planting Season: In accordance with Section 810 of South Carolina Department of Transportation Technical Specification for Seeding.

D. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.

E. Roll seeded area with roller not exceeding 112 lbs/linear foot.

F. Immediately following seeding and rolling, apply mulch to thickness of 1/8 inch. Maintain clear of shrubs and trees.

G. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.



### 3.4 HYDROSEEDING

- A. Apply fertilizer, mulch and seeded slurry with hydraulic seeder at rate of 6 lbs per 1,000 square feet evenly in one pass.
- B. Apply water with fine spray immediately after each area has been hydroseeded. Saturate to 4 inches of soil and maintain moisture levels two to four inches.

### 3.5 SEED PROTECTION

- A. Identify seeded areas with stakes and string around area periphery. Set string height to 12 inches. Space stakes at 5 feet on center.
- B. Cover seeded slopes where grade is greater than 3 H:1 V with erosion fabric. Roll fabric onto slopes without stretching or pulling.
- C. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.
- D. Secure outside edges and overlaps at 36 inch intervals with stakes.
- E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

### 3.6 MAINTENANCE

- A. Mow grass at regular intervals to maintain at maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at each mowing. Perform first mowing when seedlings are 40 percent higher than desired height.
- B. Neatly trim edges and hand clip where necessary.
- C. Immediately remove clippings after mowing and trimming. Do not let clippings lay in clumps.
- D. Water to prevent grass and soil from drying out.
- E. Roll surface to remove minor depressions or irregularities.
- F. Control growth of weeds. Apply herbicides. Remedy damage resulting from improper use of herbicides.
- G. Immediately reseed areas showing bare spots.
- H. Repair washouts or gullies.
- I. Protect seeded areas with warning signs during maintenance period.

### 3.7 SCHEDULE

- A. Lawn Area: Mix Type 1, 4-inch top soil.
- B. Pond Slopes: Mix type 2, 4-inch top soil.

END OF SECTION

SECTION 33 01 30.11  
TELEVISION INSPECTION OF SEWERS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Pipeline flushing and cleaning.
  - 2. TV inspection of sewer pipelines.
  - 3. Audio-video taping of pipeline interior.
  
- B. Related Sections:
  - 1. Section 33 31 00 - Sanitary Sewerage Piping.
  - 2. Section 33 32 40 – Bypass Pumping

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. TV Inspection of Sewer Pipelines:
  - 1. Basis of Measurement: By linear foot.
  - 2. Basis of Payment: OJRSA (Owner) will be providing cleaning, pre and post CCTV inspection services from a third party and will be paid by the Owner.

1.3 DEFINITIONS

- A. "Internal inspection" shall consist of using a closed-circuit television within a designated sewer pipeline segment to determine the physical condition of the sewer pipeline. "Internal inspection" shall consist of using a closed-circuit television (CCTV) within a designated sewer pipeline segment to detect point sources of infiltration/inflow or exfiltration, restrictions or obstructions within the pipe potentially affecting hydraulic capacity and, to determine the overall physical condition and suitability for point repair and replacement of the sewer pipeline.
  
- B. The term "clean" as used in this Section, shall mean removing all sand, dirt, roots, grease and all other solid or semi-solid materials from the sewer pipelines, so that a closed-circuit television camera can be used in the internal pipeline inspection for the purpose of discerning structural defects, misalignment, and infiltration/inflow sources. Sanitary sewer lines requiring "Heavy Cleaning" shall be defined as those pipes that have greater than twenty-five percent (>25%) of their cross-sectional area full of debris, silt, roots, sand, grit, gravel, rock, grease, oil, sludge, slime, or any other loose material or encrustation. "Heavy Cleaning" shall be defined as requiring the use of mechanical apparatuses (i.e., buckets, pigs, rodding machines, grinders, etc.) to remove debris and/or obstructions from a pipe.

1.4 REFERENCES

- A. Electronics Industries Association (EIA).

## 1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Submit completed work in thumb drives, identified by project name, street name, right-of-way property name, and manhole numbers.
- C. Thumb drives become property of Owner.
- D. Submit cleaning and television inspection logs for each section of sewer line to be replaced and rehabilitated and two thumb drives for work performed. After completion of the post-installation CCTV work for each pipeline section to be rehabilitated and replaced, the Contractor shall deliver a video of the pipelines and service laterals inspected on DVD-ROM or external hard drive to Owner or Owner Representative for review. Each video shall contain the following:
  - 1. Inspection Number
  - 2. Upstream Manhole Number (or Pipeline ID for service lateral CCTV inspections)
  - 3. Downstream Manhole Number (or Cleanout ID for service lateral CCTV inspections)
  - 4. Person & Company Performing Inspection
  - 5. Date Inspection Performed
  - 6. Length Surveyed
  - 7. Direction of Survey
  - 8. Location of all service connections (distance from upstream or downstream manhole).
  - 9. Clock direction of tap entry to main.
- E. Submit a specific, detailed description of proposed bypass pumping system to include written description of plan and addressing quantity, capacity, and location of pumping equipment. Submit spill plan to address any spills that might occur.

## 1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with local agency having jurisdiction.
- B. Use cameras with video output capable of producing minimum of 600 lines of horizontal resolution at center; optimum imagery with minimum illumination; and meet requirements of EIA Standard Video Signal.

## 1.7 QUALIFICATIONS

- A. Applicator: Company specializing in performing work of this Section with minimum three years documented experience.

## PART 2 PRODUCTS

### 2.1 Thumb drives or External Hard drives

- A. Audio track containing simultaneously recorded narrative commentary and evaluations of operator describing in detail condition of pipeline interior.

## 2.2 Cleaning Equipment

- A. The Contractor shall certify that sufficient cleaning units can be provided, including standby units in the event of breakdown, in order to complete the work within the contract period. Further, the Contractor shall certify that standby or back-up equipment can be delivered to the site within 24 hours in the event of equipment breakdown.
- B. The Contractor shall locate all hydrants from which water may be obtained.
  - 1. All details of the point of water connection, backflow protection, conveyance methods, and all local conditions regarding the use of water shall be approved by the Owner or Owner Representative prior to commencement of work. All equipment, labor, and material required for obtaining water for the work shall be provided by the Contractor.
  - 2. The Contractor must ensure that a 6-inch minimum air gap is maintained at the water supply point on de-silting/cleaning/jetting equipment or any other receiving apparatus.

## 2.3 CCTV Equipment

- A. The camera unit shall be a color pan and tilt unit for mainline inspections and may be fixed position for service lateral inspections. The television camera shall have a resolution of 700 lines minimum and shall have a source of illumination attached to it. With the monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance. The gray scale shall appear in contrasting shades of gray with no tint. To ensure the camera shall provide similar results when used with its own illumination source, the lighting shall be fixed in intensity prior to commencing the inspection. In order to ensure color constancy, no variation in illumination shall take place during the inspection. The televised image shall be displayed on a monitor, located in an enclosed space in the television inspection vehicle.
- B. CCTV Focus/Iris/Illumination: The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The adjustment of focus and iris shall provide a minimum focal range from 6 inches in front of the camera's lens to infinity. The distance along the sewer in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer. The illumination must allow an even distribution of the light around the sewer perimeter without the loss of contrast picture, flare out or shadowing.
- C. The camera shall be self-propelled or mounted on skids and drawn or pushed through the sewer by winches or jetting hose for pipelines with an equivalent diameter from 6 to 54-inches for mainline inspections. The inspecting equipment shall be capable of inspecting a length of sewer up to at least 1,000 feet when entry onto the sewer may be obtained at each end and up to 750 feet where a self-propelled unit is used, where entry is possible at one end only. Push camera units for service lateral inspections must be capable of inspecting a length up to 150 linear feet. The Contractor shall maintain this equipment in full working order and shall satisfy the Owner or Owner Representative at the commencement of each working shift that all items of equipment have been provided and are in full working order.
- D. Each inspection unit shall contain a means of transporting the CCTV camera equipment in a stable condition through the sewer under inspection. Such equipment shall ensure the maintained location of the CCTV camera on or near to the central axis of a circular shaped sewer when required in the prime position.

- E. Where the CCTV camera head is towed by winch and bond through the sewer, all winches shall be stable with either lockable or ratcheted drums. All bonds shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the CCTV camera and/or Sonar equipment. All winches shall be inherently stable under loaded conditions.
- F. Each unit shall carry sufficient numbers of guides and rollers such that, when inspecting, all bonds are supported away from pipe and manhole structures and all CCTV cables and/or lines used to measure the CCTV camera's head location within the sewer are maintained in a taut manner and set at right angles where possible, to run through or over the measuring equipment.
- G. The Contractor shall use a suitable metering device, which enables the cable length to be accurately measured; this shall be accurate to within +/- 2-inches. When requested by the Owner or Owner Representative in writing at any time during a survey or inspection, the Contractor shall demonstrate compliance with the above tolerance. The device used by the Contractor to measure the footage along the sewer will be compared with a standard tape measure. The results will be noted. If the Contractor fails to meet the required standard of accuracy, Owner or Owner Representative shall instruct the Contractor to provide a new device to measure the footage.
- H. The in-sewer photographic/video camera system and suitable illumination shall be capable of providing an accurate, uniform, and clear record of the sewer's internal condition. In-sewer lighting standards shall meet the requirements of the Owner or Owner Representative and applicable codes regarding safety and power.
- I. A reserve television camera shall be available on-site to replace the regular television camera in the event of a breakdown. Should the reserve equipment malfunction, another camera shall be provided within 24 hours.
- J. Suitable flow control devices shall be plugs designed and manufactured for use in sanitary sewers. Sandbags or other types of devices shall not be used within sanitary sewer pipelines or manholes.

## PART 3 EXECUTION

### 3.1 PREPARATION AND CLEANING

- A. Cleaning will be accomplished by utilizing a high pressure, hydraulic sewer pipeline cleaner. Pressure jetting equipment used shall be sufficient for the purposes of attaining the degree of cleanliness in sewers as specified.
- B. The cleaning unit(s) shall be capable of operating routinely, up to a minimum of 500-feet 600 feet from the point of access to the sewer; minimal hose diameter shall be one-inch diameter.
- C. The Contractor's rates specified in the bid shall be for jetting in sewers both upstream and downstream.
- D. Successive passes using constantly moving pressure jetting techniques shall be applied to sewers

until they are cleaned to the level specified. Nozzle hold-time (stationary time), for any particular location, shall not be more than 60 seconds in order to forestall damage to the pipe being cleaned. Ideally nozzles shall have jet angles of between 30° to 45°. “High efficiency nozzles” (discharging “pencil jets”) with jet angles higher than this figure shall not be allowed to be stationary at any time. Successive passes using constantly moving pressure jetting techniques shall be applied to sewers until they are cleaned to the level specified. The Contractor shall exercise care at all times in order to forestall damage to the pipe being cleaned.

- E. Cleaning shall be done immediately prior to the internal inspection to preclude the build-up of debris from infiltration/inflow sources and upstream manhole sections. Should television inspection reveal that a sewer pipeline is not clean; the cleaning operations shall be repeated until the sewer pipeline is clean. This additional cleaning shall be done at the expense of the Contractor, at no additional cost to the Owner unless “Heavy Cleaning” as defined in this Specification is authorized by the Owner or Owner Representative.
- F. During preconditioning and cleaning work and all other associated Contract operations, sewer services shall be maintained at all times. This requirement may be relaxed only with the written approval of the Owner or Owner Representative.
- G. The manholes and sewers to be preconditioned and cleaned convey sanitary sewage or combined sewage. In many instances such sewers are subject to high flows, either continuously or in a periodically varying cycle, due to rainfall, infiltration, and/or pumping operations. The Contractor shall include in his bid provisions for dealing with such variations, and where necessary, schedule his Work to accommodate such variation in flows.
- H. Cleaning shall include the trapping and removal of all sediments and residual wastes from successive manholes as the cleaning progresses. When hydraulic cleaning equipment is used, a suitable weir or dam shall be constructed in the downstream manhole, in such a manner, that the solids and water are trapped. Under no circumstances shall sewage or solids removed from the pipeline or manhole, be dumped onto streets, in catch basins or in storm drains. Material which could cause pipeline stoppages, accumulations of sand in wet wells, or damage to pumps, shall not be permitted to pass from manhole section to manhole section. The cost of trapping, removing, hauling and disposing of the residual wastes shall be included in the cost of cleaning. Residual wastes shall be removed and transported to the Felix C. Davis Wastewater Treatment Facility or other pre-approved disposal facility in a manner approved by the Owner.
- I. The Contractor shall provide for the pumping down of any surcharged manhole section and provide all bypass pumping, if required, during the cleaning operation. All costs for setup, operation and removal of bypass pumping systems shall be included in the lump sum item listed on the Bid Form.
- J. The Contractor shall submit a comprehensive equipment list to the Owner or Owner Representative before commencement of the Work. The complete list, which shall include all backup and standby equipment, shall be broken down into the following categories (at a minimum):
  - 1. Safety equipment
  - 2. Manhole preconditioning and cleaning equipment
  - 3. Sewer preconditioning and cleaning equipment

4. Mechanical equipment required for heavy cleaning
  5. Flow diversion and flow control equipment
  6. Traffic control equipment
  7. All other equipment necessary for the completion of the work
- K. Blockages in the system shall be reported to the Owner or Owner Representative immediately.
- L. A responsible representative of the Contractor shall be present on the site of the work, or other location approved by the Owner or Owner Representative, to provide supervision of the work. At all times, and especially when a change of work location is underway, the Contractor's representative shall keep the Owner or Owner Representative continuously aware of the location, progress, planned execution of the work, and problems encountered.
- M. If during the course of cleaning and/or inspection operations, the Contractor believes a pipeline will require "heavy cleaning", they shall inform the Owner or Owner Representative prior to conducting "heavy cleaning" operations. Visual evidence in the form of a CCTV image or digital image of the pipeline shall be provided by the Contractor to the Owner or Owner Representative to justify heavy cleaning operations. After reviewing the evidence, the Owner or Owner Representative shall make a determination if the evidence provided meets the definition of "heavy cleaning". If it is determined that "heavy cleaning" is required, the Owner or Owner Representative shall provide written authorization to the Contractor to proceed with "heavy cleaning" operations at the rate set forth in the Bid for the pipe or pipes determined to require "heavy cleaning".
- N. Flows may be attenuated using suitable flow control devices such as plugs designed and manufactured specifically for use in sanitary sewers. Sandbags or other types of devices shall not be used within sanitary sewer pipelines or manhole.
- O. Heavy Cleaning:
1. If roots are present which require the use of mechanical brushes or dragging devices or, if in the judgment of the Owner or Owner Representative, the pipe is more than 25% full of debris, the pipe shall be cleaned to the satisfaction of the Owner or Owner Representative and additional payment authorized under the appropriate Pay Item on the Bid Form. Heavy Cleaning shall be defined as the pipe being more than 25% full of debris or requiring the use of apparatus other than normal high-pressure jetting equipment. The Contractor shall be paid for heavy cleaning on the basis of the distance loosened debris is moved to the nearest point of extrication from the sewer. Payment shall be calculated on a lineal foot basis and will be paid in addition to the normal cleaning rate shown on the Bid Sheet. Any heavy cleaning must have pre-approval from the Owner or Owner Representative. The Contractor shall maintain detailed documentation of cleaning efforts made to remove these items. Such documentation shall be made available to the Owner at any time.
  2. It is recognized that man-entry and hand cleaning is necessary when cleaning large-bore pipe. For work under this Contract, man-entry and hand-cleaning will not automatically constitute "heavy cleaning."



### 3.2 CCTV INSPECTION

- A. Operation of the television inspection equipment shall be controlled from above ground, with a skilled technician at the control panel in the television inspection van controlling the movement of the television camera. The technician shall have the capability to: adjust the brilliance of the built-in lighting system; change the focus of the television camera by remote control; control the forward and reverse motion of the camera; and determine the camera's position, at any time. All post-repair and post-replacement installation videos shall be continuous with no evidence of "blink outs" or editing. In the event that the video is not continuous, the contractor shall re-inspect the sewer segment and provide a new video to the satisfaction of the Owner or Owner Representative.
- B. Video Inspection: Prior to the proposed construction, the section of sewer designated for point repair and replacement is to be televised over its full length using a remote television camera specifically designed for that purpose.
- C. Pre and post-installation videos and logs shall be submitted during the course of the Work. The television camera used for this purpose shall be operative in one hundred percent moisture conditions. Lighting for the camera shall be sufficient to yield a clear picture of the entire periphery of the pipe. Videos between manhole segments shall be continuous; no breaks or "blink-outs" in the video shall be observed. The videos shall be in CD-ROM or DVD format or in thumb drives.
- D. Pre-rehabilitation and pre-replacement video inspection - No more than 48-hours prior to rehabilitation and replacement, the television inspection shall be performed in one section of the sewer pipeline at a time, between adjacent manholes for mainline inspections. The inspection shall be performed by pulling, pushing or propelling the television camera through the section of the sewer along the axis of the pipeline. The inspection shall be performed in a forward and/or backward direction, as dictated by the pipeline conditions at the time of the inspection. During the inspection of the pipelines, every possible means shall be taken to ensure total viewing of the inside periphery of the pipeline. The inspection shall be conducted in such a manner as to determine that the line is clean and the location of any conditions which may prevent the proper rehabilitation or replacement of the pipeline. Television camera movement shall be temporarily halted at each visible point source of infiltration/inflow. The camera shall also be stopped at all service connections. The full cross-sectional area of service connections shall be inspected and a determination as to the active/inactive status of the service shall be made and noted. A digital copy of this inspection for each mainline pipeline or service lateral inspection conforming to the data collection standards of this section shall be supplied to the Owner or Owner Representative for review prior to commencing rehabilitation.
- E. Provisions:
  - 1. The Contractor shall maintain on site at all times a competent field supervisor in charge of the inspection. The field supervisor shall be responsible for the safety of all site workers and site conditions as well as ensuring that all work is conducted in conformance with these specifications and to the level of quality specified.
  - 2. The Contractor shall provide bypass pumping, where necessary, to prevent flooding or sanitary sewer overflows.

3. The Contractor shall provide for the pumping down of any surcharged manhole section, if required, before television inspection commences. No separate payment shall be made for bypass pumping for CCTV inspection.
4. The Contractor shall furnish, to the Owner or Owner Representative, certification of the accuracy of the automatic counter before any work shall begin on the Project. If, at any time, the Owner or Owner Representative has reason to believe that the counter is inaccurate, the calibration of the counter will be checked before any more work progresses.
5. CCTV Camera Head Speed: The speed of the CCTV camera in the sewer shall be limited to 20 feet per minute for inspections to enable all details to be extracted from the ultimate video recording.
6. At the start of each sewer length being surveyed or inspected and each reverse set-up, the length of pipeline from zero footage (the entrance to the pipe) up to the cable calibration point shall be recorded and reported in order to obtain a full record of the sewer length. Only one inspection shall be indicated in the final report. All reverse set-ups, blind manholes, and buried manholes shall be logged on a separate log. Each log shall make reference to a start (ST) and finish (FH) manhole.
7. If during the course of CCTV Inspection, a protruding tap is discovered in the pipeline that will not allow the passage of a CCTV inspection camera, then the Contractor will be required to remove the protruding tap via a remotely controlled robotic cutting device.
8. If for any reason the camera becomes disabled inside the sewer and cannot further proceed, the Contractor shall be responsible for retrieving the camera at no additional cost to the Owner.
9. All digital video shall be continuous with no evidence of missed footages or “blink-outs.” That the entire pipeline segment was traversed and inspected shall be obvious on the final digital video.

#### F. Data Collection

1. The Contractor shall furnish all equipment and software required for taking videos of the view which appears on the monitor. Digital Video will be used to record location of taps and service connections, severe leaks, holes, collapses, misalignments, and serve as a record of the pre and post installation conditions of the sanitary sewer. Standard header information such as upstream and downstream manhole numbers, direction of survey, pipe size, pipe material, date performed, person performing the inspection and length of survey shall be captured. Defect coding will not be required as part of this contract other than the location and condition of service connections and taps.
2. At the start of each manhole length a data generator shall electronically generate and clearly display on the viewing monitor and subsequently on the video recording a record of data in alpha-numeric form containing the following minimum information:
  - a. Automatic update of the camera’s footage position in the sewer line from adjusted zero.
  - b. Sewer dimensions in inches
  - c. Manhole numbers (Asset ID) or Pipeline ID and Cleanout ID
  - d. Date of survey
  - e. Road name (nearest)/location
  - f. Direction of survey, i.e., downstream or upstream
  - g. Time of start of survey

- h. Material of construction of the pipe
- G. The size and position of the data display shall be such as not to interfere with the main subject of the picture.
- H. Once the survey of the pipeline is under way, the following minimum information shall be continually displayed:
  - 1. Automatic update of the camera's footage position in the sewer line from adjusted zero.
- I. A typical log and summary form used to record internal inspection data shall be submitted by the Contractor, for the Owner or Owner Representative's review, prior to any television work being initiated.
- J. The Contractor's responsible Project representative will be available during internal television inspection, and no work shall be performed without the responsible Project representative present, unless authorized by the Owner or Owner Representative.

### 3.3 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Pipeline Inspection:
  - 1. Audio-video sections of sewer pipeline between manholes designated.
  - 2. Identify and record locations of flat grades, dips, deflected joints, open joints, broken pipe, protrusions into pipeline, and points of infiltration.
  - 3. Locate and record service connections.
  - 4. Record locations of pipeline defects and connection horizontal distance, in feet, and direction from manholes.
  - 5. Video with pipe section plugged as to view 100 percent of inside pipe diameter; use flow control methods as specified for bypass pumping system to eliminate surcharging and reduce flow.

END OF SECTION

SECTION 33 05 05.13  
SEWER AND MANHOLE TESTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
  - 1. Gravity Sewer Testing:
    - a. Low-pressure Air Test.
    - b. Exfiltration Test.
    - c. Infiltration Test.
  - 2. Deflection Testing of Plastic Piping.
  - 3. Manhole Testing:
    - a. Vacuum Test.
    - b. Exfiltration Test.
  
- B. Related Sections:
  - 1. Section 33 05 61 – Concrete Manholes.
  - 2. Section 33 31 00 - Sanitary Utility Sewerage Piping.

1.2 REFERENCES

- A. ASTM International:
  - 1. ASTM C828 - Standard Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Lines.
  - 2. ASTM C924 - Standard Practice for Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method.
  - 3. ASTM C1244 - Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.
  - 4. ASTM D2122 - Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
  
- B. Submit the following prior to start of testing:
  - 1. Testing procedures.
  - 2. List of test equipment.
  - 3. Testing sequence schedule.
  - 4. Provisions for disposal of flushing and test water.
  - 5. Certification of test gauge calibration.
  - 6. Deflection mandrel drawings and calculations.
  
- C. Test Reports: Indicate results of manhole and piping tests.

## PART 2 PRODUCTS - Not Used

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Verify that manholes and piping are ready for testing.
- B. Verify trenches are backfilled.
- C. Verify pressure piping concrete reaction support blocking or mechanical restraint system is installed.

### 3.2 PIPING PREPARATION

- A. Flush and clean piping.
- B. Assist Owner or Owner Representative in lamping gravity piping.
  - 1. Owner or Owner Representative will perform lamping operation by shining light at one end of each pipe section between manholes; observe light at other end; reject pipe not installed with uniform line and grade
  - 2. Remove and reinstall rejected pipe sections; re-clean and assist Owner or Owner Representative with re-lamping.
- C. Plug outlets, wye-branches, and laterals; brace plugs to resist test pressures.

### 3.3 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Notify Owner or Owner Representative 72 hours in advance of tests and have witness tests.

### 3.4 TESTING GRAVITY SEWER PIPING

- A. Low-pressure Air Test:
  - 1. Perform test in accordance with applicable portions of ASTM 828 and ASTM 924.
  - 2. Test each section of gravity sewer piping between manholes.
  - 3. Introduce air pressure slowly to approximately 4 psig.
  - 4. Determine groundwater elevation above spring line of pipe. For every foot of groundwater above spring line of pipe, increase starting air test pressure by 0.43 psig; do not increase pressure above 10 psig.
  - 5. Allow pressure to stabilize for at least five minutes. Adjust pressure to 3.5 psig or increased test pressure as determined above when groundwater is present. Start test.
  - 6. Determine test duration for sewer section with single pipe size from the following table. Do not make allowance for laterals.

Nominal Pipe Size (inches)	Minimum Test Time (min/ 100 feet)
3	0.2
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2
30	4.8
33	5.4
36	6.0

7. Record drop in pressure during test period; when air pressure has dropped more than 1.0 psig during test period, piping has failed; when 1.0 psig air pressure drop has not occurred during test period, discontinue test and piping is accepted.
8. When piping fails, determine source of air leakage, make corrections and retest; test section in incremental stages until leaks are isolated; after leaks are repaired, retest entire section between manholes.

B. Exfiltration Test:

1. Test pipe larger than 36 inch diameter with exfiltration test not exceeding 100 gallons for each inch of pipe diameter for each mile per day for each section under test. Perform test with minimum positive head of 2 feet.

C. Infiltration Test:

1. Use only when gravity piping is submerged in groundwater minimum of 4 feet above crown of pipe for entire length being tested.
2. Maximum Allowable Infiltration: 100 gallons per inch of pipe diameter for each mile per day for section under test; include allowances for leakage from manholes. Perform test with minimum positive head of 2 feet.

### 3.5 DEFLECTION TESTING OF PLASTIC PIPING

- A. Perform vertical ring deflection testing on PVC and ABS sewer piping after backfilling has been in place for at least 30 days but not longer than 12 months.
- B. Allowable maximum deflection for installed plastic sewer pipe is limited to 5 percent of original vertical internal diameter.
- C. Furnish rigid ball or mandrel with diameter not less than 95 percent of base or average inside diameter of pipe as determined by ASTM standard to which pipe is manufactured. Measure pipe in compliance with ASTM D2122.

- D. Perform deflection testing using properly sized rigid ball or 'Go, No-Go' mandrel.
- E. Perform test without mechanical pulling devices.
- F. Locate, excavate, replace, and retest pipe exceeding allowable deflection.

3.6 TESTING MANHOLES

- A. General: This test to be performed for new manhole installation. Test using air whenever possible prior to backfilling to assist in locating leaks. Make joint repairs on both outside and inside of joint to ensure permanent seal. Test manholes with manhole frame set in place.
- B. Vacuum test in accordance with ASTM C1244 and as follows:
  - 1. Plug pipe openings; securely brace plugs and pipe.
  - 2. Inflate compression band to affect seal between vacuum base and structure; connect vacuum pump to outlet port with valve open; draw vacuum to 10 inches of Hg; close valve; start test.
  - 3. Determine test duration for manhole from the following table:

Manhole Diameter	Test Period
4 feet	60 seconds
5 feet	75 seconds
6 feet	90 seconds

- 4. Record vacuum drop during test period; when vacuum drop is greater than 1 inch of Hg during test period, repair and retest manhole; when vacuum drop of 1 inch of Hg does not occur during test period, discontinue test and accept manhole.
  - 5. When vacuum test fails to meet 1 inch Hg drop in specified time after repair, repair and retest manhole.
- C. Exfiltration Test:
  - 1. Plug pipes in manhole; remove water in manhole; observe plugs over period of not less than 2 hours to ensure there is no leakage into manhole.
  - 2. Determine groundwater level outside manhole.
  - 3. Fill manhole with water to within 4 inches of top of cover frame. Prior to test, allow manhole to soak from minimum of 4 hours to maximum of 72 hours; after soak period, adjust water level inside manhole to within 4 inches of top of cover frame.
  - 4. Measure water level from top of manhole frame; at end of 4 hour test period, again measure water level from top of manhole frame; compute drop in water level during test period.
  - 5. Manhole exfiltration test is considered satisfactory when drop in water level is less than values listed in table below:

Manhole Depth (feet)	Allowable Leakage (Inches for Manhole Diameter)		
	4 feet	5 feet	6 feet
4	0.11	0.14	0.17
6	0.17	0.21	0.26
8	0.23	0.29	0.35
10	0.28	0.35	0.42

Manhole Depth (feet)	Allowable Leakage (Inches for Manhole Diameter)		
	4 feet	5 feet	6 feet
12	0.34	0.43	0.51
14	0.40	0.50	0.60
16	0.45	0.56	0.68
18	0.51	0.64	0.77
20	0.57	0.71	0.86
22	0.62	0.78	0.93
24	0.68	0.85	1.02
26	0.74	0.93	1.11
28	0.79	0.99	1.19
30	0.85	1.06	1.28

6. When unsatisfactory test results are achieved, repair manhole and retest until result meets criteria, repair visible leaks regardless of quantity of leakage.

END OF SECTION



SECTION 33 31 00  
SANITARY SEWERAGE PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sanitary sewer pipe and fittings.
2. Bedding and cover materials.
3. Underground pipe markers.
4. Connection to existing manholes.
5. Wye branches and tees.
6. Sanitary Laterals.
7. Transition Couplings

B. Related Sections:

1. Section 31 23 16 – Excavation and Fill: Requirements for excavation and backfill as required by this Section.
2. Section 31 23 16.13 - Trenching: Excavation, bedding and backfill requirements for trenching required by this Section.
3. Section 33 32 40 – Bypass Pumping: Sanitary sewer bypass requirements for bypass pumping required by this Section.
4. Section 33 01 30.11 – Television inspection of sewers
5. Section 33 05 05.13 – Sewer and manhole Testing

1.2 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Sanitary Sewer Pipe: All gravity sewer line piping line items shall be measured in linear feet and shall include costs for piping and installation, locating wire, locating tape, trench excavation, trench protection, dewatering, 57 stone, asphalt cutting, normal joints and gaskets, normal backfill, infiltration and exfiltration testing, and mandrel pulling. Lines will not be approved or accepted until the Owner approves all testing results. Owner will coordinate materials testing and be responsible for the cost of all passing tests. Costs associated with any failed materials tests will be the responsibility of the contractor. No additional payment shall be made for these items.
- B. Point Repairs to existing sanitary sewer will be measured actual linear length of repairs along the centerline of the pipeline at the specified depth, measured from grade to pipe invert, completed in accordance to the Contract Documents and individually (each) as identified on the Bid Form and shall include payment for all materials, equipment, and work required to perform point repairs to existing sewers to repair defects and/or replace or install tees for service connections. Pipe used for point repairs may be as shown on Plans however, the inside diameter of the new pipe must match the inside diameter of the existing sewer line. The work shall be performed as specified and in accordance with the details.
1. This item further includes payment for everything necessary to complete the repair as specified on the Drawings and herein including locating the repair segment,

accessing sewers, manholes, and laterals as specified, clearing, saw cutting existing asphalt or concrete and off-site disposal of the material, excavation, removal and off-site disposal of existing soil and sewer pipe, installation of new sewer pipe, transition couplings, connections to existing sewers, manholes, and laterals, locating and accessing service connections and laterals, bedding, backfilling, compaction, grading, protecting existing utilities, bypass pumping of existing wastewater flows (up to 2 mgd) as necessary, post-installation video inspection, removing and replacing mailboxes, fences, landscaping features, culvert pipes and other such moveable objects as necessary, traffic control, coordination with and location of existing utilities, erosion control, and all else incidental thereto for which separate payment is not provided under other Bid Items. In addition, the costs for restoration of grassed areas disturbed by the work, including seeding and mulching of right-of-away areas after construction shall be considered incidental to the work and all costs shall be included in the unit prices bid – no separate payment will be made. This item also includes television inspection after the point repairs are completed to confirm proper installation. Point Repairs are considered completed once all areas (paved and grassed) are restored, prior to which, repairs will not be approved for payment.

2. The base Bid Items includes installation of bedding and backfilling with the excavated soil.
3. Payment will be made for each point repair at the installed depth. Payment will be made based on the Unit Price bid in the Proposal.
4. Owner will coordinate materials testing and be responsible for the cost of all passing tests. Costs associated with any failed materials tests will be the responsibility of the contractor. No additional payment shall be made for these items.

### 1.3 REFERENCES

#### A. American Association of State Highway and Transportation Officials:

1. AASHTO T 180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

#### B. American Water Works Association:

1. AWWA C104 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
2. AWWA C105 - Polyethylene Encasement for Ductile-Iron Pipe Systems.
3. AWWA C110 - Ductile-Iron and Gray-Iron Fittings.
4. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
5. AWWA C150 - Thickness Design of Ductile-Iron Pipe.
6. AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast.
7. AWWA C153 - Ductile-Iron Compact Fittings.

#### C. ASTM International:

1. ASTM A746 - Standard Specification for Ductile Iron Gravity Sewer Pipe.
2. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
3. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.

4. ASTM C923 - Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures, Pipes and Laterals.
5. ASTM C1479 - Standard Practice for Installation of Precast Concrete Sewer, Storm Drain, and Culvert Pipe Using Standard Installations.
6. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft<sup>3</sup> (600 kN-m/m<sup>3</sup>).
7. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft<sup>3</sup> (2,700 kN-m/m<sup>3</sup>).
8. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.
9. ASTM D2466 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40.
10. ASTM D6938 - Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
11. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

D. American Water Works Association:

1. AWWA C110 - American National Standard for Ductile-Iron and Grey-Iron Fittings, 3 in. Through 48 in. (75 mm through 1200 mm), for Water and Other Liquids.
2. AWWA C111 - American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
3. AWWA C153 - American National Standard for Ductile-Iron Compact Fittings for Water Service.
4. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.

E. SCDOT Standard Specifications:

1. Standard Specifications for Highway Construction, latest edition, published by the South Carolina Department of Transportation.

## 1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Permits: Submit copies of construction permits obtained for this Work.
- C. Product Data: Submit catalog cuts and other pertinent data indicating proposed materials, accessories, details, and construction information.
- D. Submit reports indicating field tests made and results obtained as specified in Section 33 05 05.13 – Sewer and manhole testing.
- E. Manufacturer's Installation Instructions:
  1. Indicate special procedures required to install Products specified.
  2. Submit detailed description of procedures for connecting new sewer to existing sewer line and directional drilling, or pipe jacking installation.
- F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

G. Submit flow bypass plan as specified in the Section 33 32 40 for approval by the Owner or Owner Representative.

#### 1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record location of pipe runs, pipe repairs, connections, manholes, cleanouts, and invert elevations.

C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

#### 1.6 QUALITY ASSURANCE

A. Perform Work in accordance with SCDOT Standard Specifications.

B. Maintain one copy of document on site.

#### 1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum 3 years documented experience.

#### 1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store valves in shipping containers with labeling in place.

B. Block individual and stockpiled pipe lengths to prevent moving.

C. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.

D. Do not place pipe flat on ground. Cradle to prevent point stress.

E. Store UV sensitive materials out of direct sunlight.

#### 1.9 FIELD MEASUREMENTS

A. Verify field measurements and elevations are as indicated.

#### 1.10 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work with local sewerage authority. Convene pre-installation meeting minimum of one week prior to starting Work of this Section.

C. Notify affected utility companies minimum of 72 hours prior to construction.

## PART 2 PRODUCTS

### 2.1 SANITARY SEWER PIPE AND FITTINGS

A. PVC Flexible Joint Plastic Pipe: 4 to 12-inches shall conform with AWWA C900 and PVC pipe greater than 12-inches in diameter shall be AWWA C905 material; bell and spigot style rubber ring sealed gasket joint.

1. Pipe Class:
  - a. 4 to 12 inches: Class 150 (DR-18)
  - b. Greater than 12 inches: Class 235 (DR 18)
2. Fittings: PVC conforming to pipe specifications.
3. Joints: ASTM F477, elastomeric gaskets.

B. Ductile-Iron Pipe:

1. Comply with ASTM A746
2. Minimum Pressure Class: 250 psi, AWWA C150 & C151.
3. End Connections: Bell and spigot
4. Outside Coating:
  - a. Type: Asphaltic.
  - b. Minimum Uniform Thickness: 2 mil.
  - c. Comply with ASTM E-96-66, B117, G95, D714-87, G22-90.
5. Lining:
  - a. Protecto 401 epoxy ceramic.
  - b. Minimum nominal thickness: 40 mils
  - c. Comply with AWWA C104.
6. Lining Repair
  - a. Protecto 401 Joint Compound.
7. PE Encasement: Comply with AWWA C105.
8. Fittings:
  - a. Material: Ductile iron, Class 52 or greater.
  - b. Comply with AWWA C153 or AWWA C110.
  - c. Lining: Cement-mortar lined according to AWWA C104
9. Joints:
  - a. Rubber gasket joint devices.
  - b. Comply with AWWA C111.

### 2.2 FLEXIBLE PIPE BOOT FOR MANHOLE PIPE ENTRANCES

A. Furnish materials in accordance with authority having jurisdiction.

B. Flexible Pipe Boot: ASTM C923, ethylene propylene rubber (EPDM), Series 300 stainless steel clamp and stainless-steel hardware.

## 2.3 UNDERGROUND PIPE MARKERS

- A. Plastic Ribbon Tape: Brightly colored green continuously printed with "SANITARY SEWER" in large letters, minimum 6 inches wide by 4 mils thick.

## 2.4 CONCRETE AND GROUT

- A. Concrete: Class A Concrete conforming to SCDOT Standard Specifications.
  1. Compressive strength of 3,000 psi at 28 days.
  2. Air entrained.
  3. Water cement ratio of 0.488 with rounded aggregate and 0.532 with angular aggregate.
  4. Maximum slump of 3.5 inch for vibrated concrete and 4 inch for non-vibrated concrete.
  5. Minimum cement content of 564 pounds per cubic yard for vibrated concrete and 602 pounds per cubic yard for non-vibrated concrete.
- B. Grout: Non-shrink, non-metallic in accordance with SCDOT Standard Specifications with a compressive strength of at least 5,000 psi at 3 days.

## 2.5 BEDDING AND COVER MATERIALS

- A. General: Conform to Section 31 23 16.13 - Trenching for bedding and backfill around and on top of pipe.
- B. Bedding for Rigid Pipe (DIP): Clean sand, slightly silty sand, or slightly clayey sand having a Unified Soil Classification of SP, SP-SM or SP-SC.
- C. Bedding for Flexible Pipe (PVC): Clean coarse aggregate Gradation No. 57 conforming to SCDOT Standard Specifications.

## 2.6 TRANSITION COUPLINGS

- A. Couplings shall be used to joint pipe of difference materials. Couplings with adjustable stainless steel shear rings shall be installed according to the manufacturer's instructions. Adjustable repair couplings shall conform to ASTM C1173.
- B. Transition couplings used to join Ductile Iron or C900 and ASTM D3034 PVC sewer pipe.
  1. Shall be Ductile Iron, deep bell, push on joint, and air test rated.
  2. Ductile Iron material shall comply with ASTM A536, Grade 65-45-12 or 88-55-06.
  3. Bell depths shall meet the minimum socket depth requirements of ASTM F1336.
  4. Gaskets shall be machined.
  5. Gaskets shall be of SBR rubber and comply with ASTM F477.
  6. No rubber couplings with bands are permitted unless transiting to and/or from vitrified clay (VC) pipe.
  7. All couplings shall have pipe stops and a flow way tapered to allow a smooth transition between the pipes.

## 2.7 FLEXIBLE COUPLINGS

- A. A DFW/HPI non-shear coupling, Mission Flex Seal ARC Coupling, Fernco Strong Back RC, or approved equal shall be used between transitions of pipe materials and connections to existing pipe.

## 2.8 SOURCE QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Requirements for testing, inspection, and analysis.

- B. Owner Inspection:

1. Make completed pipe sections available for inspection at manufacturer's factory prior to packaging for shipment.
2. Notify Owner at least two days before construction activities for point repairs and seven days before request inspection for replacement is allowed.

- C. Certificate of Compliance:

1. If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.
2. Specified shop tests are not required for Work performed by approved manufacturer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify that trench cut and excavation base is ready to receive Work of this Section.
- C. Verify existing sanitary sewer utility main size, location, and inverts are as indicated on Drawings.

### 3.2 BY-PASS PUMPING

- A. Contractor shall be solely responsible for bypass system meeting requirements specified in Section 33 32 40. Contractor shall be responsible to limit the extent and duration of any blockages and back-ups so that overflows and spillage onto public or private property and into storm sewers, waterways, and streets does not occur. If such spillage or overflows do occur during the course of or as a result of the Work, the Contractor performing the Work shall immediately notify the Owner and eliminate the spillage or overflow and, as necessary, remove the blockage and eliminate the back-up. On elimination of the spillage or overflow, the Contractor is to clean up and disinfect the area as directed by the Owner. Work to stop or contain such events is to be deemed EMERGENCY in nature and sufficient justification for total mobilization of resources, the use of overtime or double time, and any other reasonable measures to assure correction of the problem without delay. Damages and any costs incurred arising from blockages, back-ups,

spillage, or overflows of sewage during the course of the Work or because of the Work shall be the sole responsibility of the Contractor.

- B. The installation methodology contemplated requires the temporary blocking and back-ups of sewers and sewage. Contractor shall be responsible to limit the extent and duration of such blockages and back-ups so that overflows and spillage onto public or private property and into storm sewers, waterways, and streets does not occur. If such spillage or overflows do occur during the course of or as a result of the Work, the Contractor performing the Work shall immediately notify the Owner and eliminate the spillage or overflow and, as necessary, remove the blockage and eliminate the back-up. On elimination of the spillage or overflow, the Contractor is to clean up and disinfect the area as directed by the Owner. Work to stop or contain such events is to be deemed EMERGENCY in nature and sufficient justification for total mobilization of resources, the use of overtime or double time, and any other reasonable measures to assure correction of the problem without delay. Damages and any costs incurred arising from blockages, back-ups, spillage, or overflows of sewage during the course of the Work or because of the Work shall be the sole responsibility of the Contractor.
- C. Sewage flow shall be pumped around segments during the televising of sewers, replacement, and point repairs.
- D. Pumping equipment shall have the capacity to convey 100% of peak flows around the construction area. The flow shall be intercepted at the upstream end of the construction area and shall be pumped through temporary piping of adequate size. The flow shall be discharged into a manhole on the downstream side of the construction area, thus by-passing the sewer segment(s) under construction. The Contractor shall be required to contact all residential and commercial customers whose service lines connect to the sewer main being bypassed and inform them that they will be temporarily out of service. The Contractor shall also advise those customers against water usage until the mainline is back in service. The Contractor may be required to leave door-hangers on each affected residence or commercial entity at least 48 hours prior to beginning work. The door-hangers to be used shall list the Contractor's 24-hour contact name and telephone number as well as a designated contact for the Owner (if applicable). If requested by Owner, the Contractor shall send a knowledgeable representative to any public meeting(s) deemed necessary by the Owner to address questions or concerns of the general public. After completing the necessary work on the main line to allow its reuse, the Contractor shall advise those customers that the sewer main is back in service. The Contractor shall maintain a high degree of professionalism, both in workmanship and appearance, at all times. Should a condition arise that the Contractor cannot restore service within 12 hours of service interruption; the Contractor shall make provisions for pumping all flows within the service interruption area at no cost to the Owner.
- E. Open channels or trenches shall not be used to convey flow.
- F. A standby pump of the same capacity shall be required on site.
- G. The Contractor is responsible for paying all fines imposed for overflows or spills during construction.



### 3.3 EXCAVATION AND BEDDING

- A. Excavate pipe trench in accordance with Section 31 23 16.13 - Trenching.
- B. Excavate to lines and grades shown on Drawings or required to accommodate installation of encasement.
- C. Dewater excavations to maintain dry conditions and preserve final grades at bottom of excavation.
- D. Provide sheeting and shoring in accordance with Section 31 23 16.13 - Trenching.
- E. Place bedding material at trench bottom, level continuous layer not exceeding 8-inch compacted depth; compact to 95 percent per Section 31 23 16.13 - Trenching.
- F. Correct over-excavation with coarse aggregate.
- G. Remove large stones or other hard materials that could damage pipe or impede consistent backfilling or compaction.
- H. Protect and support existing sewer lines, utilities, and appurtenances.
- I. Utilities:
  - 1. Maintain profiles of utilities.
  - 2. Coordinate with other utilities to eliminate interference.
  - 3. Notify Owner or Owner Representative if crossing conflicts occur.

### 3.4 INSTALLATION – PIPE

- A. Install in accordance with manufactures instructions and as indicated on Drawings.
- B. Install plastic pipe, fittings, and accessories in accordance with ASTM D2321.
- C. Install VCP, fittings, and accessories in accordance with ASTM C12.
- D. Install RCP, fittings, and accessories in accordance with ASTM C1479.
- E. Install CIP and DIP, fittings, and accessories in accordance with applicable portions of AWWA C600.
- F. Seal joints watertight.
- G. Lay pipe to slope gradients indicated on Drawings with maximum variation from indicated slope of 1/8 inch in 10 feet. Begin at downstream end and progress upstream.
- H. Ensure entire pipe is supported by bedding.
- I. Assemble and handle pipe in accordance with manufacturer’s instructions except as modified on the Drawings or by Owner or Owner Representative.

- J. Keep pipe and fittings clean until work is completed and accepted by Owner or Owner Representative. Cap open ends during periods of work stoppage.
- K. Lay bell and spigot pipe with bells upstream.
- L. Connect pipe to existing sewer system as indicated on Drawings at existing manhole or using doghouse manhole connection per Section 33 05 13.16 - Public Manholes and Structures.
- M. Place haunching material, rod, and tamp per Section 31 23 16.13 – Trenching to eliminate voids.
- N. Install underground marking tape continuously 18 inches above pipeline.
- O. Bedding:
  - 1. Excavate pipe trench as specified in Section 31 23 16.13 - Trenching
  - 2. Place bedding material at trench bottom.
  - 3. Level materials in continuous layer not exceeding 8 inches.
  - 4. Maintain optimum moisture content of bedding material to attain required compaction density.
- P. Piping:
  - 1. Install pipe, fittings, and accessories according to ASTM D2321 and seal joints watertight.
  - 2. Lay pipe to slope gradients as indicated on Drawings.
  - 3. Begin at downstream end of system and progress upstream.
  - 4. Bedding: As indicated on Drawings.
  - 5. Lay bell-and-spigot pipe with bells upstream.
  - 6. Backfill and compact as specified in Section 31 23 16.13 - Trenching.
  - 7. Do not displace or damage pipe when compacting.
  - 8. Connect to municipal sewer system through installed sleeves.
  - 9. Pipe Markers: As specified in Section 33 05 97 - Identification and Signage for Utilities.
  - 10. Installation Standards: Install Work according to SCDHEC standards.
- Q. Manholes: As specified in Section 33 05 61 - Concrete Manholes.
- R. Backfilling: As specified in Section 31 23 16 – Excavation and Fill.

### 3.5 TYPICAL SEQUENCE OF POINT REPAIR

- A. Install and operate diversion pumping equipment to maintain sewage flow and to prevent backup or overflow. Obtain approval for diversion pumping equipment and procedures from Owner Representative.
- B. Design all piping, joints and accessories to withstand twice the maximum system pressure or 50 psi, whichever is greater.
- C. In the event of accidental spill or overflow, immediately stop the overflow and take action to clean up and disinfect spillage. Promptly notify Owner Representative so that required reporting can be made to the SCDHEC and the Environmental Protection Agency.

- D. Survey, clean and televise as specified in the Section 33 01 30.11 Television inspection of sewers to verify the location of point repair.
- E. Excavate to the minimum length of existing pipe to be replaced.
- F. Prior to replacing pipe, determine condition of the existing line on both sides of point repair by lamping the line a minimum of 10 feet in each direction. Determine whether additional lengths of line beyond "minimum length" criteria, need replacement. Report needs for additional replacement to Owner Representative and obtain approval before proceeding.
- G. Remove and replace failed pipe and connect to existing pipe using transition couplings mentioned in this specification. Reconnect affected service connections or stacks.
- H. Establish proper grade for the pipe being replaced using methods acceptable to Owner Representative.
- I. After completion of point repair, but prior to backfill, a visual inspection will be performed by Owner or Owner Representative. Repair and retest sections that fail. Contractor to notify Owner or Owner Representative via email 3 days prior to inspection. Failure to notify Owner or Owner Representative prior to backfilling will require to re-excavate at contractor's expense for inspection.
- J. Backfill the excavation as specified in Section 31 23 16.
- K. In unpaved areas, bring surface to grade and slope surrounding the excavation.
- L. Perform a post-completion TV inspection as specified in Section 33 01 30.11. Point repairs that have offset joints, non-uniform grade or alignment, or other unsatisfactory conditions, shall be rejected. Replace pipe and bedding as required when work is rejected.

### 3.6 TOLERANCES

- A. Section 01 40 00 - Quality Requirements: Requirements for tolerances.
- B. Maximum Variation from Indicated Slope: 1/8 inch in 10 feet.

### 3.7 CONNECTION TO EXISTING MANHOLE

- A. Core drill existing manhole to clean opening. Using pneumatic hammers, chipping guns, and sledgehammers is not permitted.
- B. Install watertight gasket and seal with non-shrink concrete grout as shown on plans.
- C. Concrete encase new sewer pipe minimum of 12 inches to nearest pipe joint. Use epoxy binder between new and existing concrete.
- D. Prevent construction debris from entering existing sewer line when making connection.

### 3.8 MANHOLE INSTALLATION

- A. Install manholes in accordance with Section 33 05 13.16 – Public Manholes and Structures.

### 3.9 INSTALLATION - WYE BRANCHES AND TEES

- A. Install wye branches or pipe tees at locations indicated on Drawings concurrent with pipe laying operations. Use standard fittings of same material and joint type as sewer main.
- B. Maintain minimum 5 feet separation distance between wye connection and manhole.
- C. Use saddle wye or tee with stainless steel clamps for taps into existing piping. Mount saddles with solvent cement or gasket and secure with metal bands. Layout holes with template and cut holes with mechanical cutter.

### 3.10 INSTALLATION - SANITARY LATERALS

- A. Construct laterals from wye branch to terminal point at right-of-way or as indicated on Drawings.
- B. Where depth of main pipeline warrants, construct riser type laterals from wye branch.
- C. Maintain 3-foot minimum depth of cover over pipe.
- D. Maintain minimum 5-foot separation distance between laterals.
- E. Install watertight plug, braced to withstand pipeline test pressure thrust, at termination of lateral. Install temporary marker stake extending from end of lateral to 24 inches above finished grade. Paint top 6 inches of stake with fluorescent orange paint.

### 3.11 BACKFILLING

- A. Backfill around sides and to top of pipe in accordance with Section 31 23 16.13 - Trenching.
- B. Maintain optimum moisture content of backfill material to attain required compaction density.

### 3.12 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Request inspection prior to and immediately after placing bedding.
- C. Perform test on sanitary sewage system in accordance with Section 33 05 05.13 Sewer and manhole testing. Perform the following tests:
  - 1. Gravity Sewer Testing:
    - a. Low pressure air test.
    - b. Infiltration test.
  - 2. Deflection Testing of Plastic Piping.
  - 3. Manhole Testing: Vacuum Test.
  - 4. Notify Owner 72 hours in advance of test and have witness test.

D. Testing:

1. If tests indicate that Work does not meet specified requirements, remove Work, replace, and retest.
2. Perform testing on Site sanitary sewage system according to SCDHEC standards.

E. When tests indicate Work does not meet specified requirements, remove work, replace, and retest.

3.13 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.
- C. Cap open ends of piping during periods of Work stoppage.

END OF SECTION

**SECTION 33 32 40  
BYPASS PUMPING**

**I. GENERAL**

**1.1 DESCRIPTION OF WORK**

- A. All applicable requirements of other portions of the Contract Documents apply to the Work of this Section.
- B. The Work covered by this section consists of providing all labor, equipment, material and supplies and performing all operations required to bypass pump storm and wastewater (hereinafter referred to as sewage) around a manhole or sewer section in which Work is to be performed. The Contractor shall provide all pumps, piping and other equipment necessary to accomplish bypass pumping; perform all construction; obtain all permits; pay all costs; and perform complete restoration of all existing facilities and areas disturbed to conditions equal to or better than pre-construction conditions and to the satisfaction of the Owner.
- C. General Requirements
  - 1. The estimated daily flow rates for dry weather and wet weather flows will be provided for specific projects identified in need of Bypass Pumping.

<b>ID</b>	<b>Pipe size (in)</b>	<b>Peak Daily Dry Weather flow (GPM)</b>	<b>Peak Hourly Wet Weather flow (GPM)</b>
<b>Pipe 893-892</b>	10	672 (0.97 MGD)	887 (1.28 MGD)
<b>Pipe 897-896</b>	10	672 (0.97 MGD)	887 (1.28 MGD)
<b>Pipe 912-911</b>	10	N/A	N/A
<b>Pipe 913-912</b>	10	N/A	N/A
<b>Pipe 156-157</b>	15	179 (0.26 MGD)	691 (1.0 MGD)
<b>Pipe 53-52</b>	30	367 (0.53 MGD)	1276 (1.84 MGD)

For the sections with unavailable flows, dry weather flows will be calculated assuming pipe is flowing half full and wet weather flows will be calculated assuming pipe is flowing full.

- 2. If the depth of flow in the sewer line being televised or repaired is above the maximum allowable for the proposed Work, then the Contractor shall reduce the flow to the levels shown in Section 33 01 30.11 – Television Inspection of

Sewers, by manual operation of pump stations, plugging or blocking of the flow, or by pumping and bypassing of the flow, as acceptable to the Owner. Plugging or blocking of the flow shall only be allowed when the Contractor can demonstrate that the upstream gravity collection system can accommodate the surcharging without any adverse impact. Operation of pumping stations must be performed by the Owner and scheduled by the Contractor.

3. Violations from sewage spills shall be the sole responsibility of the Contractor.
4. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction in the State of South Carolina.
5. The Contractor shall provide bypass pumping redundancy of a minimum of 100% pump capacity of the total required flow within the system. The intent of the redundant pump capacity is to ensure adequate back-up pumps are immediately available to the system. Back-up pumps shall be on-line, isolated from the primary system by a valve.

## 1.2 SUBMITTALS

Submittals shall be made by the Contractor in accordance with the procedures set forth in Section 01 33 00 – Submittal Procedures, and as described below.

The Contractor shall submit to the Owner a detailed plan and description outlining all provisions and precautions that the Contractor shall take regarding the handling of sewage flows. The plan shall be submitted to the Owner for review and approval at least 7 Days prior to commencing Work on each portion of the system to be bypassed. The plan must be specific and shall include, but not be limited to, the following details.

- A. Schedule for installation and maintenance of bypass pumping system.
- B. Staging areas for pumps.
- C. Bypass pump sizes, capacity, number of each size to be on site and power requirements.
- D. Calculations of static lift, friction losses, and flow velocity.
- E. Pump curves showing pump operating range.
- F. Road crossing details.
- G. Protection against main breaks.
- H. Sewer plugging methods and bypass time duration for each sewer section.
- I. Size, length, material, location and method of installation for suction and discharge

piping. This shall include any wet tap or hot tap procedures.

- J. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill.
- K. Method of noise control for each pump and/or generator.
- L. Standby power generator size and location.
- M. Downstream discharging plan.
- N. Methods of protecting discharge manholes or structures from erosion and damage.
- O. Restraining lengths for piping. Thrust blocks will not be allowed as a method of restraint for bypass pumping systems.
- P. Location of fuel tank(s) and other potential contaminants.
- Q. Control and reliability methods including float switches, visual and audible alarms, and pump controls.
- R. Overflow Prevention, Containment and Cleanup Plan

## **II. EXECUTION**

### **2.1 GENERAL**

- A. The Contractor shall provide the necessary operating controls for each pump.
- B. To prevent the accidental spillage of flows, all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Only materials that withstand pressures greater than the peak bypass system pressures may be used. All materials shall be suitable for constant contact with domestic sanitary sewage. Under no circumstances will aluminum "irrigation" type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the Owner. The bypass pumping system shall be 100% watertight.

### **2.2 CONSTRUCTION REQUIREMENTS**

- A. Preparation:
  - 1. The Contractor is responsible for locating any existing utilities in the area where the Contractor elects to locate the bypass pipelines. The Contractor shall locate his bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the temporary pipeline locations from the Owner. All costs associated with relocating utilities and obtaining all approvals shall be paid by the



Contractor.

2. When working inside a manhole or force main, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.
3. The Contractor is responsible for obtaining any approvals for placement of the temporary pipeline within public rights-of-way from the South Carolina Department of Transportation and Local Regulatory and Permitting Agencies.

B. Plugging and Blocking:

A sewer line plug shall be inserted into the line upstream of the section being bypassed. The plug shall be so designed that all or any portion of the upstream flow can be released. During television inspections and repair operations, flow through the line being worked shall be reduced to within the maximum limits established in Section 33 01 30.11 – Television Inspection of Sewers, or as may otherwise be specified in Section 00 80 00 – Special Provisions. After the work has been completed, the flow shall be restored to normal.

C. Pumping and Bypassing.

1. When bypass pumping is required, the Contractor shall supply all necessary pumps, conduits and other equipment to divert the flow around the pipe section or manhole in which Work is to be performed. The bypass system shall be of sufficient capacity to handle existing peak dry-weather flow plus additional flow that may occur during wet-weather (i.e. rainfall or snowmelt events). The Contractor shall be responsible for furnishing the necessary labor and supervision to set up and operate the bypass system. Pumps and equipment shall be continuously monitored by the Contractor during the periods that bypassing is required.
2. The Contractor shall select pumping/bypassing equipment that will not have excessive noise levels from pumping/bypassing equipment and shall be restricted to a maximum of seventy decibels (70 dB) at a distance of 50 feet, or as may be required in Section 00 80 00 – Special Provisions. If pumping is required on a 24-hour basis, engines shall be equipped in a manner to keep noise to a minimum and in accordance with the local requirements for noise control.

D. Flow Control Precautions

1. When flow in a sewer line is plugged, blocked or bypassed by the Contractor, Contractor shall take sufficient precautions to protect the public health and to protect the sewer lines from damage that might result from sewer surcharging. Further, the Contractor shall take precautions to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewers involved. The Contractor shall be responsible for any damage resulting from his flow control operations.

2. When flow in a sewer line is plugged or blocked by the Contractor, he shall monitor the conditions upstream of the plug and shall be prepared to immediately start bypass pumping, if needed. Any liquid or solid matter which is bypass pumped from the sewer collection system shall be discharged to another sewer manhole or appropriate vehicle or container only. No such liquid or solid matter shall be allowed to be discharged, stored or deposited to the open environment. The Contractor shall protect all pumps, conduit and other equipment used for bypass from traffic or other possible sources of damage.
3. Should any liquid or solid matter from the sewer system be spilled, discharged, leaked or otherwise deposited to the open environment as a result of the Contractor's flow control operations, he shall be responsible for all cleanup and disinfection of the affected area and all associated costs. The Contractor shall also be responsible for notifying the sewer system operating personnel and appropriate regulatory agencies and performing all required cleanup operations at no additional cost to the Owner.

### **III. MEASUREMENT FOR PAYMENT**

- A. No separate measurement or payment will be made for bypass pumping in sewers with an estimated daily flow of less than 2 million gallons per day (mgd).
- B. Estimated daily flows shall be provided by the Owner to the Contractor prior to initiating a specific project.
- C. For sewers with estimated daily flows of greater than 2 mgd as defined above, the Contractor will be paid for bypass pumping based on the flow rates and localized conditions. Payment shall be made on a daily or lump sum basis as indicated on the Bid form. Measurement and payment shall include all labor, materials, equipment, tools and incidentals for pump setup, plugging, pumping and diversion of sewage flow, development of the flow control and bypassing plan, setup, pumps, piping, fuel/electricity, maintenance, transportation and storage, temporary bypass and service piping, confined space entry and equipment, inserting and removing pipe plugs, constructing bulkheads, pumping flows, monitoring water levels, installing bypass/diversion piping, trenching, jacking and boring, abandoning the jacked casing, plating for diversion piping, backfill, compaction, placing temporary pavement, traffic control, and surface restoration.

END OF SECTION