

**Seneca Nation**  
**Contract Specifications**  
**For**  
**Sullivan Hollow Water Tank Project**

**October 2021**



**Prepared by:**  
**Joel A. Merrill, P.E.**  
**Seneca Nation Health System**  
**987 R.C. Hoag Dr.**  
**Salamanca, NY 14779**

Sullivan Hollow Tank Project

**Notice to Contractors For  
Sullivan Hollow Water Tank Project  
On the Allegany Territory of the Seneca Nation**

The project involves constructing a new glass-fused to steel standpipe water tank and related work located at 6374 Sullivan Hollow Road, Great Valley, NY 14741 on the Allegany Territory of the Seneca Nation.

Bids for the construction of the water tank and related work will be received until 10:30 a.m. local time on Monday November 29th 2021 (and publicly opened and read aloud at 10:30 a.m.) at the office of the Owner (Joel Merrill, P.E.) at the Seneca Nation of Indians Health System at 987 R.C. Hoag Drive, Salamanca NY 14779. This work will be conducted under one prime contract. Each Bid must be made using the **forms provided in the Contract Documents.** **All forms within the Contractor's Bid Proposal portion of the Contract Documents are required to be filled out.** **Minimum Wage Rates shall be as determined by the Davis-Bacon wage rates available at <https://beta.sam.gov>**

Copies may be obtained at: Seneca Nation Health System-Attn: Joel Merrill, P.E., 987 R.C. Hoag Dr., Salamanca, NY 14779, (716) 945-5894 x527

Bids must be submitted in sealed envelopes with the Project Name plainly written on the outside at address above. No Bidder may withdraw his Bid within 45 days after the Bid Opening. The successful Bidder must furnish Performance and Payment Bonds, each in an amount at least equal to the Total Bid, issued by a surety company acceptable to the Seneca Nation. Bidders are not to include in their Bid, sales and compensating use taxes of the State of New York and of counties or cities on materials, equipment, and supplies to be incorporated into the Project. The Seneca Nation requires that Bidders certify, under penalty of perjury, that the Bids have been prepared without collusion with other Bidders, subcontractors, suppliers, etc. A certification is included with the Bid Proposal which each Bidder must sign in the space provided.

TERO labor requirements and fee (5%) will apply.

The Seneca Nation reserves the right to reject any or all bids offered.

# Sullivan Hollow Tank Project

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## **INSTRUCTIONS TO BIDDERS**

### **1. DEFINED TERMS**

Terms used in these Instructions to Bidders, which are defined in the Standard General Conditions of the Construction Contract (No. 1910-8, 1990 Edition), have the meanings assigned to them in the General Conditions. The term "Bidder" means one who submits a Bid directly to Owner, as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the lowest, qualified, responsible and responsive Bidder to whom Owner makes an award. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

### **2. COPIES OF BIDDING DOCUMENTS**

2.1 Complete sets of the Bidding Documents stated in the Advertisement or Invitation to Bid may be obtained at the locations stated therein.

2.2 Complete sets of Bidding Documents must be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3 Owner and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

### **3. QUALIFICATIONS OF BIDDERS**

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 as may be called for in the Bid Proposal. Each Bid must contain evidence of Bidder's qualification to do business in the jurisdiction where the Project is located or covenant to obtain such qualification prior to award of the contract.

### **4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE**

4.1 It is the responsibility of each Bidder before submitting a Bid:

4.1.1 To examine thoroughly the Contract Documents and other related data identified in the Bidding Documents (including "technical data" referred to below);

4.1.2 To 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;

4.1.3 To consider federal and Nation laws and regulations that may affect cost, progress, performance or furnishing of the Work;

4.1.4 To study and carefully correlate Bidder's knowledge and observations with the Contract Documents and such other related data; and

4.1.5 To promptly notify Engineer of all conflicts, errors, ambiguities or discrepancies which Bidder has discovered in or between the Contract Documents and such other related documents.

4.2 Reference is made to the Supplementary Conditions for identification of:

4.2.1 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, nor upon the completeness thereof for the purposes of bidding or construction.

4.2.2 Those drawings of physical conditions in or relating to existing surface and subsurface conditions (except Underground Facilities) which are 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 drawings but not upon other data, interpretations, opinions or information shown or indicated in such drawings or otherwise relating to such structures, nor upon the completeness thereof for the purposes of bidding or construction.

Copies of such reports and drawings have been made available by Owner to any Bidder in the Appendices to the Technical Specifications. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained herein upon which Bidder is entitled to rely as provided in Paragraph 4.2 of the General Conditions has been identified and established in Paragraph SC-4.2 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.3 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.

4.4 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.

4.5 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.

4.6 On request in advance, and after indemnifying Owner from any and all claims of any kind whatsoever arising directly, indirectly, or consequently as a result of Bidder or its representative having access to the site, 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 shall fill all holes and clean up and restore the site to its former conditions upon completion of such explorations, investigations, tests and studies.

4.7 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 Engineer written notice of all conflicts, errors, ambiguities and discrepancies that Bidder has discovered in the Contract Documents and the written resolutions thereof by the Engineer 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.

## **5. AVAILABILITY OF LANDS FOR WORK, ETC.**

5.1 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 Contractor 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 Contractor. 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. INTERPRETATION AND ADDENDA**

6.1 All questions about the meaning or intent of the Bidding Documents are to be directed to the Project Manager in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed, sent by facsimile, or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than five (5) 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.

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

6.3 Failure of a Bidder to receive any Addendum, or to acknowledge receipt thereof, will not relieve such Bidder from conforming with the requirements which such Addendum imposes on his Bid or the Contract Documents, and may subject his Bid to disqualification by Owner.

**7. BID SECURITY**

7.1 No Bid Security is required for this project

**8. CONTRACT TIMES**

The number of days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment (the Contract Times) are set forth in the Agreement. Intermediate stages to be completed by prescribed Milestone Dates are also set forth in the Agreement.

**9. LIQUIDATED DAMAGES AND ENGINEERING CHARGES**

Provisions for liquidated damages, if any, and engineering charges resulting from delay in completion, are set forth in the Agreement.

**10. SUBSTITUTE OR "OR-EQUAL" ITEMS**

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in Paragraphs 6.7.1, 6.7.2 and 6.7.3 of the General Conditions, Supplementary Conditions, and in the General Requirements. Disapproval or rejection of an "or-equal" or substitute by Engineer shall not result in any modification to the Contract amount as originally bid.

**11. BID FORMS AND CERTIFICATION**

11.1 The Bid forms, certificates, etc., required for preparing a Bid appear in the Contractor's Bid Proposal section of the bound Bidding Documents. All bidders shall utilize the Contractor's Bid Proposal pages in preparing and submitting their Bid. Forms must be completed by printing neatly in black ink.

11.2 Fill in blanks on Page BP-1, including identification of Contract for which a Bid is being submitted, Bidder's Name, and listing of Addenda received by Bidders.

11.3 Fill out the appropriate blanks in the Schedule of Prices by inserting amounts, both in words and in figures, consistent with the Contract for which a Bid is being submitted. Compute and enter Total Bid Price or Prices, as set forth in the Schedule of Prices.

11.4 Bids by corporations must be executed in the corporate name by the President or Vice-President (or other authorized 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 below the signature.

11.5 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear above the signature and the official address of the partnership must be shown below the signature.

11.6 All names must be typed or printed above the signature.

11.7 The address and telephone number for communications regarding the Bid must be shown in the space provided.

11.8 Attach Bid security. Have Surety Company execute attached Statement of Surety's Intent.

11.9 Execute the certifications, assurances or affidavits which are attached to the Bid Form and which are identified therein.

## **12. SUBMISSION OF BIDS**

12.1 Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), and the name and address of the Bidder 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 of it. Oral, telephonic, telegraphic, facsimile or other electronically transmitted bids will not be considered.

12.2 The Bid constitutes all elements of the Bid Form and its attachments, as furnished to prospective Bidders, and as amended by applicable Addenda, if any, during the bidding period.

## **13. MODIFICATION AND WITHDRAWAL OF BIDS**

13.1 A Bidder may withdraw his bid where a unilateral error or mistake is discovered in the bid, after a showing of the following:

13.1.1 The mistake is known or made known to the OWNER prior to the awarding of the Contract or within three days after the opening of the bid, whichever period is shorter; and

13.1.2 The price bid was based on an error of such magnitude that enforcement would be unconscionable; and

13.1.3 The bid was submitted in good faith and the bidder submits credible evidence that the mistake was a clerical error as opposed to a judgment error; and

13.1.4 The error in the bid is actually due to an unintentional and substantial arithmetic error or an unintentional omission of a substantial quantity of work, labor, material, or services made directly in the compilation of the bid, which can be shown by objective inspection of the original work paper, documents, or materials used in the preparation of the bid sought to be withdrawn; and

13.1.5 It is possible to place the OWNER in status quo ante; the same position he enjoyed prior to bid.

13.2 The sole remedy for a bid mistake shall be withdrawal of the bid and the return of the bid bond or other security, if any, to the Bidder. Thereafter, the OWNER may, in its discretion award the Contract to the next lowest bidder or rebid to Contract.

**14. OPENING OF BIDS**

14.1 Bids will be opened as indicated in the Advertisement or Invitation to Bid. Only the total bid prices and major alternate prices will be read aloud.

**15. BIDS TO REMAIN SUBJECT TO ACCEPTANCE**

15.1 All Bids will remain subject to acceptance for forty-five days after the day of Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid Security prior to that date.

**16. AWARD OF CONTRACT**

16.1 Owner reserves the right to reject any and all Bids, including without limitation, the rights to reject any or all nonconforming, nonresponsive, unbalanced or conditional Bid 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 Award a Contract to 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. Bids containing incomplete or no price information for any Bid item which thus prevents evaluation of the extended total for that Bid item will be rejected.

16.2 In evaluating Bids, Owner will consider the qualifications of the Bidders, compliance with the Tribal Employment Rights Ordinance (“TERO”), whether or not the Bids comply with the 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.

16.3 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, to perform and furnish the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.

16.4 If the Contract is to be awarded, it will be awarded to the responsible Bidder who submits the lowest Bid Price, consistent with TERO, and whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.

16.5 If the Contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within forty-five days after the day of the bid opening.

## **17. CONTRACT SECURITY**

17.1 Paragraphs 5.1 of the General Conditions and the Supplementary Conditions set 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 for the full amount of the Contract Price.

17.2 Article 5 of the General Conditions and the Supplementary Conditions set forth the Owner's requirements as to the types and extent of insurance coverage's which are to be furnished and maintained by the Contractor. When the Successful Bidder delivers the executed Agreement to Owner, the required Certificate of Insurance shall be submitted at that time.

## **18. SIGNING OF AGREEMENT**

18.1 The required number of the unsigned counterparts of the Agreement, together with attached Contract Documents, will be forwarded to the Successful Bidder following issuance of the Notice of Award. Within fifteen days thereafter, the Contractor shall sign and deliver to the Owner all counterparts of the Agreement, together with attached Contract Documents, the required Contract Security, and duly executed acknowledgement of signatures. Within ten days thereafter, provided that signatures are in order and Contract Security is acceptable, Owner will sign all counterparts of the Agreement, including duly executed acknowledgment of signature, and return one executed copy thereof to Contractor with attached Contract Documents. Each counterpart is to be accompanied by a complete set of Drawings with appropriate identification.

## **19. COPIES OF DOCUMENTS**

19.1 Paragraph 2.2 of the Supplementary Conditions identifies the number of copies of Contract Documents which OWNER will furnish to CONTRACTOR and the way for CONTRACTOR to obtain additional copies.

Additional copies of Contract Documents may be purchased at ENGINEER's normal rates for reproduction.

## **20. PRE-BID CONFERENCE**

20.1 A pre-bid conference will be held if indicated in the Advertisement. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

**21. SALES AND USE TAXES**

21.1 Owner is exempt from State and County Sales and Use Taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Contract Price. Refer to Supplementary Conditions; paragraph SC-6.15 for additional information.

**22. NOT USED**

**23. IDENTITY OF SUBCONTRACTORS AND SUPPLIERS**

23.1 The identity of certain subcontractors, suppliers, and other person and organizations (including those who are to furnish the principal items of material and equipment) is to be submitted to Owner in advance of the specified date prior to the Effective Date of the Agreement. Therefore, the apparent Successful Bidder and any other Bidder so requested, shall within seven days after the Bid opening, submit to Owner a list of 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 subcontractor, supplier, person or organization if requested by Owner.

**24. EQUAL OPPORTUNITY**

24.1 The Successful Bidder will not discriminate against any employee or applicant for employment because of race, color, religion, sex, handicap or national origin. The Successful Bidder will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, color, religion, sex, handicap or national origin. Such action shall include but not be limited to, employment, upgrading, demotion, or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including apprenticeship. The Successful Bidder agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non discrimination clause.

24.2 The Successful Bidder will state in all solicitations or advertisements for employees placed by or on behalf of the Bidder that all qualified applicants will receive consideration for employment without regard to race, color, religion, creed, age, sex, marital status, national origin, ancestry, present or past history of mental disorder, mental retardation or physical disability, including, but not limited to, blindness.

24.3 The Successful Bidder will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice advising the labor union or workers' representative of the Successful Bidder's commitments under this Equal Opportunity clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

**25. NATIVE AMERICAN UTILIZATION POLICY**

25.1 The Successful Bidder shall acknowledge by the Seneca Nation of Indians Tribal Employment Rights Ordinance (“TERO”). Each Bidder will be required to maximize their efforts to involve Native American owned firms as well as Native American trade persons in each phase of the Project and to be bound by and fully comply with TERO and any amendments or modifications thereto, including but not limited to any actions taken by the Seneca Nation of Indians pursuant to TERO.

**26. TRIBAL HISTORIC PRESERVATION POLICY**

26.1 The Seneca Nation adheres to the Seneca Nation of Indians Tribal Historic Preservation Officer Policies and Procedures (“THPO”), a copy of which will have been furnished to the Successful Bidder. Bidder agrees that the Nation’s THPO will be incorporated in all contracts pertaining to the construction of the Project. The Successful Bidder, including its employees, Subcontractors, agents, material men and vendors, will be required to comply with the requirements of THPO, including strict adherence to THPO protocol in the event of the discovery of human remains and associated funerary objects.

**27. CONFIDENTIALITY**

Successful Bidder shall not disclose to third parties technical or other information disclosed by Owner or Owner’s agents or authorized representatives to Successful Bidder during performance of construction Work by Successful Bidder provided such information is not in the possession of Successful Bidder at the time of disclosure, or is not then and does not become a part of the public knowledge or literature. Technical Information includes all drawings, specifications, notes, letters, verbal communications, and any information relating to the product, process, or Project name. Successful Bidder represents that all technical and administrative employees of Successful Bidder have signed confidentiality agreements with Successful Bidder which bind them to observe this confidentiality requirement. If in the performance of Work for Owner, it is necessary for Successful Bidder to disclose confidential information to third parties, such disclosure shall be made only after prior written approval by Owner and Successful Bidder shall require such third parties to sign similar confidentiality agreements.

**28. EXTRA-NATION COMMUNICATIONS**

28.1 The Successful Bidder acknowledges the sovereignty of the Seneca Nation of Indians as separate and apart from the United States and state and local governments. The Successful Bidder shall not communicate in any way, directly or indirectly, with any federal, state or local government or other instrumentality relating to any matter related to the Project, including but not limited to the Bidding Documents, except to the extent the Successful Bidder has received the prior written authorization of Owner. This prohibition is intended to and shall extend to all those acting through or under the Successful Bidder, including but not limited to the Successful Bidder's employees, Subcontractors, agents, material men and vendors. Notwithstanding any other provision of these Instructions, if the Successful Bidder, or its employees, Subcontractors, agents, material men and vendors, fail to comply with this prohibition regarding extra-Nation communications, Owner shall have the right to immediately terminate the Contract and pursue any and all other rights available at law or in equity.

**29. SALVAGEABLE MATERIALS**

29.1 Owner shall have the right of first refusal to any salvageable materials removed from the Project site, including to but not limited to any steel, copper and scrap iron. Successful Bidder shall inform Owner at least one week prior to the expected date(s) of availability of any such salvageable materials.

**CONTRACTOR'S BID PROPOSAL**

This Bid is submitted to the Seneca Nation of Indians

By: \_\_\_\_\_  
(Name of Bidder)

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Times included in this Bid and the Agreement, respectively, and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for forty-five days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen days after the date of OWNER's Notice of Award.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
  - (a) BIDDER has examined and carefully studied the Bidding Documents and the following Addenda, receipt of all which is hereby acknowledged:

Date	Number
_____	_____
_____	_____
_____	_____
_____	_____

- (b) BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work.
  - (c) BIDDER is familiar with and is satisfied as to all federal and Nation regulations that may affect cost, performance and furnishing of the Work.
  - (d) BIDDER acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the

Bidding Documents with respect to Underground Facilities at or contiguous to the site. BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto. BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

- (e) BIDDER is aware of the general nature of Work to be performed by OWNER and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
- (f) BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- (g) BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which the Bid is submitted.
- (h) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

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4.
  - (a) BIDDER will complete the Work for the prices entered in the Schedule of Bid Items which follows.
  - (b) The BIDDER has included the cost of all Work described in the Contract Documents and if any Work is not listed in the Bid Item Descriptions, the BIDDER has included the cost in the Bid Item under which it most logically ought to have been included.
  - (c) Unit Prices have been computed in accordance with paragraph 11.9.2 of the General Conditions. BIDDER acknowledges that quantities are not guaranteed and final payment will be based on actual quantities determined as provided in the Contract Documents.
5. BIDDER agrees that the Work will be completed within the time periods stipulated in the Agreement from the date when the Contract Time commences to run as provided in paragraph 2.3 of the General and Supplementary Conditions.

BIDDER accepts the provisions of the Agreement as to Engineering Charges for Delays in Completion and provisions for Liquidated Damages, if any, and other definable damages, if any in the event of failure to complete the Work on time.

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6. BIDDER and his surety, where appropriate, have completed and executed the following documents which are attached to and made a condition of this Bid:

- (a) Required BIDDERS's Qualification Statement with supporting data.
- (b) Non-Collusive Bidding Certification
- (c) Statement of Surety's Intent

7. Communications concerning this Bid shall be addressed to:

The address of BIDDER indicated below.

The following address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. The terms used in this Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

THIS BID SUBMITTED ON \_\_\_\_\_, 20\_\_\_\_.

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9. Signature of BIDDER and other appropriate information, if BIDDER is:

**AN INDIVIDUAL**

By: \_\_\_\_\_  
(SEAL)

(Individual's Typed or Printed Name)

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

doing business as \_\_\_\_\_

Business address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

**A PARTNERSHIP**

By: \_\_\_\_\_  
(SEAL)

(Firm Name)

\_\_\_\_\_  
(Partner's Typed or Printed Name)

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

Business address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

Sullivan Hollow Tank Project

**A CORPORATION**

By: \_\_\_\_\_  
(Corporation Name)

\_\_\_\_\_  
(State of Incorporation)

By: \_\_\_\_\_  
(Typed or Printed Name & Title of Person Authorized to Sign)

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

(Corporate Seal)

Attest: \_\_\_\_\_  
(Secretary)

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

Phone No.: \_\_\_\_\_

**A JOINT VENTURE**

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

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

\_\_\_\_\_  
(Address)

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

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

\_\_\_\_\_  
(Address)

*(Each joint venturer must sign. The manner of signing for each individual, partnership and corporation that is a party to the joint venture should be as indicated above.)*

**ATTACHMENTS**

BIDDER and his surety, where appropriate, have completed and executed the attached documents which are identified below.

BASE BID FORM

BIDDER'S QUALIFICATION STATEMENT

NON-COLLUSIVE BIDDING CERTIFICATION

STATEMENT OF SURETY'S INTENT

**BASE BID**

CONTRACTOR NAME: \_\_\_\_\_

ITEM NO.	ESTIMATED QUANTITIES	UNITS	ITEMS WITH LUMP SUM BID PRICES WRITTEN IN WORDS	AMOUNT BID (DOLLAS/CENTS)
1	1	LS	Sullivan Hollow Water Tank Project, lump sum price  of: _____  _____	\$ _____

- Note:
- 1.) Amounts are to be shown on both words and figures. In the event of a discrepancy, the amount(s) shown in words shall govern.
  - 2.) The bidder's attention is called to the fact that the OWNER reserves the right to reject any and all bids received. Also, the OWNER reserves the right to compare bids on the basis of available funding. In addition, the OWNER reserves the right to negotiate time schedules for construction based on the work qualifications of the successful bidder.

**BIDDER'S QUALIFICATION STATEMENT**

To induce the making of this Contract, the Bidder represents to the Owner the following, as evidence of Bidder's Qualifications to perform the work herein specified:

1. How many years has your organization been in business under the name in which you propose to execute this Contract?  
 \_\_\_\_\_ Years
  
2. What projects of character similar to that proposed has your present organization completed? Give the information indicated by the following tabulations.

Name, Address, and Phone No. of Owner for whom work was done	Description of Work	Approximate Amount of Contract	Approximate Date Work was done

3. Has your present organization ever failed to complete any work awarded to it? If so, state when, where and why. \_\_\_\_\_  
 \_\_\_\_\_

4. Do you have, or can you procure the necessary personnel, equipment, facilities and financial resources to immediately undertake and satisfactorily complete the work contemplated in this Contract? \_\_\_\_\_

**NON-COLLUSIVE BIDDING CERTIFICATION**

BY SUBMISSION OF THIS BID OR PROPOSAL, THE BIDDER CERTIFIES THAT:

1. This bid or proposal has been independently arrived at without collusion with any other bidder or with any other competitor or potential competitor.
2. This bid or proposal has not been knowingly disclosed and will not be knowingly disclosed, prior to the opening of bids or proposals for this project, to any other bidder, competitor or potential competitor.
3. No attempt has been or will be made to induce any other person, partnership or corporation to submit or not to submit a bid or proposal.
4. The person signing this bid or proposal certifies that he/she fully informed himself/herself regarding the accuracy of the statements contained in this certification, and under the penalties of perjury, affirms the truth thereof, such penalties being applicable to the bidder as well as to the person signing in its behalf.

\_\_\_\_\_  
Bidder

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

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

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

**Statement of Surety's Intent**

To the Seneca Nation of Indians (Owner):

We have reviewed the Bid of \_\_\_\_\_  
(Contractor)

of \_\_\_\_\_  
(Address)

for the construction of Newtown Water Tank Project, Bids for which will be received on \_\_\_\_\_  
(bid opening date)

and wish to advise that should this Bid of the Contractor be accepted and the Contract awarded to him, it is our present intention to become surety on the performance bond and the payment bond required by the Contract.

Any arrangement for the bonds required by the Contract is a matter between the Contractor and ourselves and we assume no liability to you or third parties if for any reason we do not execute the requisite bonds.

We are duly authorized to do business in the State of \_\_\_\_\_

Attest:

\_\_\_\_\_  
\_\_\_\_\_  
Surety's Authorized Signature(s)

Attach Power of Attorney

(Corporate seal if any. If no seal, write "No Seal" across this place and sign.)

(This form must be completed prior to submission of the bid)

**Agreement**

**AGREEMENT**

**AGREEMENT BETWEEN OWNER AND CONTRACTOR**

THIS AGREEMENT is dated as of the \_\_\_\_ day of \_\_\_\_\_ in the year 20\_\_ by and between the Seneca Nation of Indians (hereinafter called OWNER) and \_\_\_\_\_ (hereinafter called CONTRACTOR).

OWNER AND CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

**ARTICLE 1 - WORK**

CONTRACTOR shall perform and complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

**Sullivan Hollow Water Tank Project on the Allegany Territory.**

**ARTICLE 2 - ENGINEER**

The Project has been designed by Seneca Nation Health Engineer who is hereinafter called ENGINEER, assume all duties and responsibilities and have the rights and authority assigned in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

**ARTICLE 3 - CONTRACT TIMES**

3.1 Time is of the essence of this agreement. The Work shall be substantially complete within **120 calendar days\*** from the date when the Contract Times commence to run as provided in paragraph 2.3 of the General and Supplementary Conditions.

### 3.2 Damages for Delay in Completion

- 3.2.1 Engineering Charges: If the Work is not substantially completed, or is not completed and ready for final payment, within the respective maximum allowable times specified in paragraph 3.1, including any extensions allowed in accordance with Article 12 of the General Conditions, engineering charges incurred by the OWNER after the aforesaid completion time will be charged to the CONTRACTOR in addition to the total amount of liquidated damages and other definable damages to be assessed pursuant to paragraphs 3.2.2 and 3.2.3 below and deducted from monies owed the CONTRACTOR. The amount will be determined by OWNER, based on ENGINEER's accounting records and fee invoices submitted to OWNER for services rendered by ENGINEER under Article 9 of the General Conditions during the applicable time periods.
- 3.2.2 Liquidated Damages: OWNER and CONTRACTOR recognize that time is of the essence in this Agreement, and that OWNER will suffer financial loss in addition to extra engineering costs if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty), CONTRACTOR shall pay OWNER five-hundred dollars (\$500) for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete, plus any engineering charges assessed pursuant to paragraph 3.2.1 above.

After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the time specified in paragraph 3.1 for completion and readiness for final payment or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER five-hundred dollars (\$500) for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

The calculated amounts of liquidated damages will be deducted from payments made to CONTRACTOR beginning with the payment period within which liquidated damages have begun. However, at his option, OWNER may deduct the total amount of such damages from CONTRACTOR's final payment.

Other Definable Damages: CONTRACTOR agrees that, to the extent that fines may be imposed on OWNER by any governmental authorities due to missed completion dates, water quality violations, the cost of which cannot be known at the outset of the project, but will be easily determined at the time they are incurred, and such fines are imposed on OWNER due to CONTRACTOR's failure to meet contract requirements, CONTRACTOR shall pay OWNER the actual cost of such fines imposed.

#### **ARTICLE 4 - CONTRACT PRICE**

- 4.1 The OWNER will pay CONTRACTOR for completion of the Work in accordance with the Contract Documents the amount of the Bid Price stated in the CONTRACTOR's Bid Proposal, attached hereto as Attachment 1, hereby identified as the Contract Price.
- 4.2 When unit bid price items are included in the Contract Price, the quantities of various units contained in the Bid Proposal are estimated and payment will be made only for the actual quantities of units that are incorporated in the Work, as determined by the ENGINEER in accordance with paragraph 9.10 of the General Conditions.

#### **ARTICLE 5 - PAYMENT PROCEDURES**

- 5.1 CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions and Article 14 of the Supplementary Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions and Supplementary Conditions.
- 5.2 Progress Payments: OWNER will make monthly progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment, as recommended by ENGINEER during construction. Payments will be on the basis of the progress of the Work measured, by the schedule of values established in paragraph 2.9 of the General and Supplementary Conditions, and in the case of unit price items, on the basis of quantities incorporated in the Work. Payments will be in an amount equal to 90% of the Work completed (with the balance being retained) and 90% of the value of undamaged materials and equipment not incorporated in the Work but delivered, suitably stored, and accompanied by documentation satisfactory to OWNER in accordance with paragraph 14.2 of the General Conditions and Supplementary Conditions, less in each case the aggregate of payments previously made, and less such amounts which may be lawfully deducted. At such time as the Project is deemed by OWNER to be ninety percent (90%) complete, OWNER shall, in accordance with the payment terms set forth in the Contract Documents, pay to CONTRACTOR an amount equal to fifty percent (50%) of the full amount of retainage withheld by OWNER to date, and thereafter the amount to be withheld from each payment (other than the final payment) due hereunder shall be five percent (5%), rather than ten percent (10%). At the time of final payment, OWNER shall pay to CONTRACTOR the full amount of the retainage withheld by OWNER to date, less an amount equal to two percent (2%) of the Contract price. OWNER shall release the full amount of any retainage held by the OWNER at the later of the expiration of the correction period or any correction period extension as described in Section 13.12 of the General and Supplementary Conditions.
- 5.3 Payment After Substantial Completion: Once the project is deemed substantially complete in accordance with paragraph 14.8 of the General Conditions, OWNER will

pay as its next progress payment to CONTRACTOR an amount sufficient to increase total payments to CONTRACTOR to 100% of the final Contract price, less two percent (2%) of such Contract price to be held as a retainage through the correction period as described in paragraph 5.2; less a retained amount which shall equal two times the dollar value of any work remaining to be completed, as determined by ENGINEER and agreed to by OWNER; less retained amounts necessary to satisfy any claims, liens or judgments against the CONTRACTOR which have not been suitably discharged; less amounts previously paid the CONTRACTOR; and less any other sums which may be lawfully deducted, the net retained amount being termed the "Final Payment", all in accordance with paragraph 14.8.1 of the Supplementary Conditions.

- 5.4 Release of Final Payment: OWNER will release retained monies due the CONTRACTOR, except for the retainage to be held by OWNER during the correction period pursuant to paragraph 5.2, within 45 days after the date when the requirements for and conditions associated with the release of such amounts have been met, as provided in paragraphs 14.12 and 14.13 of the General and Supplementary Conditions.
- 5.5 Withholding of Payments: OWNER may withhold any payment which ENGINEER refuses to recommend as a result of one or more citations made by ENGINEER under paragraph 14.7 of the General Conditions and paragraph 14.7 of the Supplementary Conditions, or because claims have been made against OWNER or Liens have been filed in connection with the Work. OWNER may continue to withhold such payment until said citations have been removed or remedied to ENGINEER's satisfaction or until the claims have been settled and liens discharged to OWNER's satisfaction.

## **ARTICLE 6 - (NOT USED)**

## **ARTICLE 7 - CONTRACTOR'S REPRESENTATIONS**

In executing this Agreement, CONTRACTOR makes the following representations:

- 7.1 CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in Article 8) and the other related data identified in the Bidding Documents including "technical data".
- 7.2 CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.
- 7.3 CONTRACTOR is familiar with and is satisfied as to all applicable federal, state and Nation Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- 7.4 CONTRACTOR has carefully studied all reports of explorations and tests of subsurface

conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.2.1 of the General Conditions. CONTRACTOR accepts the determination set forth in paragraph SC-4.2 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely as provided in paragraph 4.2 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR's purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto: CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

- 7.5 CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.
- 7.6 CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- 7.7 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

## **ARTICLE 8 - CONTRACT DOCUMENTS**

The Contract Documents which comprise the entire Agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

8.1 Project Manual

8.1.1 This Agreement (pages AG-1 to AG-10, inclusive).

8.1.2 Exhibits to this Agreement as follows:

- a. Exhibit "A"; Performance and Other Bonds (pages A-1 to A-4, inclusive).
- b. Exhibit "B"; Certificates of Insurance.
- c. Exhibit "C"; Notice of Award, Notice to Proceed.

8.1.3 CONTRACTOR's Bid Proposal (Attachment 1).

8.1.4 General Conditions, consisting of the Standard General Conditions of the Construction Contract, pages 1 to 42, inclusive.

8.1.5 Supplementary Conditions, as follows:

- a. Supplementary Conditions, pages SC-1 to SC-26, inclusive.

8.1.6 Specifications consisting of separate Sections individually identified by number, title and numbered pages, as listed in the Table of Contents thereof.

8.2 Contract Drawings, as Identified on the Cover Drawing titled: Newtown Water Tank Project

8.3 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying or supplementing the Contract Documents pursuant to paragraphs 3.5 and 3.6 of the General Conditions.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be modified or supplemented as provided in paragraphs 3.5 and 3.6 of the General Conditions.

**ARTICLE 9 - MISCELLANEOUS**

9.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions shall have the meanings indicated in the General Conditions.

9.2 Except as otherwise provided under this paragraph 9.2, no assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in

any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents. Notwithstanding the foregoing, OWNER may, without consent of CONTRACTOR, assign this Agreement to the Nation, or any other instrumentality or department of the Nation, upon written notice to the CONTRACTOR, if the assignee assumes OWNER's rights and obligations under the Contract Documents. CONTRACTOR shall execute all consents reasonably required to facilitate such assignment.

- 9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, his partners, successors, assigns and legal representatives in respect to all covenants, agreements and obligations contained in the Contract Documents.
- 9.4 Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER or CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

**SIGNATURES AND ACKNOWLEDGMENTS**

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR, and ENGINEER. All portions of the Contract Documents have been signed, initialed, or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

This Agreement will be effective on \_\_\_\_\_, 20\_\_.

OWNER

CONTRACTOR

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

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

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

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

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

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

Address for giving notices:

Address for giving notices:

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

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

(Attach evidence of authority to sign and resolution or other documents authorizing execution of Agreement.)

License No. \_\_\_\_\_

Agent for process:

\_\_\_\_\_

(If CONTRACTOR is a corporation, attach evidence of authority to sign.)

**SIGNATURES AND ACKNOWLEDGMENTS**

(ACKNOWLEDGMENT OF CONTRACTOR, IF A CORPORATION)

STATE OF \_\_\_\_\_ )  
 )ss:  
COUNTY OF \_\_\_\_\_ )

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

(SEAL)

\_\_\_\_\_

\* \* \* \* \*

(ACKNOWLEDGMENT OF CONTRACTOR, IF A PARTNERSHIP)

STATE OF \_\_\_\_\_ )  
 )ss:  
COUNTY OF \_\_\_\_\_ )

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

(SEAL)

**SIGNATURES AND ACKNOWLEDGMENTS**

(ACKNOWLEDGMENT OF CONTRACTOR, IF AN INDIVIDUAL)

STATE OF \_\_\_\_\_ )  
 ) ss:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally appeared \_\_\_\_\_ who resides in \_\_\_\_\_, to me known and known to me to be the person described in and who executed the foregoing instrument and he acknowledged to me that he executed the same.

(SEAL)

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

\* \* \* \* \*

(ACKNOWLEDGMENT OF OFFICER OF OWNER)

STATE OF \_\_\_\_\_ )  
 ) ss:  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally came and appeared \_\_\_\_\_ to me known, who, being duly sworn, did depose and say that he is the \_\_\_\_\_ of the \_\_\_\_\_ described in, and which executed the foregoing instrument, that he knows the seal of said OWNER; that one of the impressions appearing on said instrument is a true and correct impression of such seal; and that he affixed it thereto and attested the same over his signature by virtue of authority in him vested.

(SEAL)

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

**EXHIBIT A**

**PERFORMANCE AND OTHER BONDS**

1. Commentary to Accompany Construction Bonds (one page)
2. Construction Performance Bond (Pages A-1 and A-2)
3. Construction Payment Bond (Pages A-3 and A-4)
4. Power of Attorney (to be attached by Surety)

# Commentary to Accompany Construction Bonds

## A. GENERAL INFORMATION

There are two types of construction bonds that are required by statutes for public work in many jurisdictions and are widely used for other projects as well.

- Construction Performance Bond Construction Payment Bond

The Construction Performance Bond is an instrument that is used to assure the availability of funds to complete the construction.

The Construction Payment Bond is an instrument that is used to assure the availability of sufficient funds to pay for labor, materials and equipment used in the construction. For public work the Construction Payment Bond provides rights of recovery for workers and suppliers similar to their rights under the mechanics lien laws applying to private work.

The objective underlying the rewriting of construction bond forms was to make them more understandable and to provide guidance to users. The intention was to define the rights and responsibilities of the parties, without changing the traditional rights and responsibilities that have been decided by the courts. The new bond forms provide helpful guidance regarding time periods for various notices and actions and clarify the extent of available remedies.

The concept of a pre-default meeting has been incorporated into the Construction Performance Bond. All of the participants favored early and informal resolution of the problems that may precipitate a default, but some Surety companies were reluctant to participate in pre-default meetings absent specific authorization in the bond form.

The responsibilities of the Owner and the options available to the Surety when a default occurs are set forth in the Construction Performance Bond. Procedures for making a claim under the Construction Payment Bond are set forth in the form.

EJCDC recommends the use of two separate bonds rather than a combined form. Normally the amount of each bond is 100 percent of the contract amount. The bonds have different purposes and are separate and distinct obligations of the Surety. The Surety Association reports that the usual practice is to charge a single premium for both bonds, and there is no reduction in premium for using a combined form or for issuing one bond without the other.

## B. COMPLETING THE FORMS

Bonds have important legal consequences; consultation with an attorney and a bond specialist is encouraged with respect to federal, state, and local laws applicable to bonds and with respect to completing or modifying the bond forms.

Both bond forms have a similar format and the information to be filled in is ordinarily the same on both bonds. If modification is necessary, the modifications may be different.

The bond forms are prepared for execution by the Contractor and the Surety. Evidence of authority to bind the Surety is usually provided in the form of a power of attorney designating the agent who is authorized to sign on behalf of the Surety. The power of attorney should be filed with the signed bonds.

Each bond must be executed separately since they cover separate and distinct obligations.

Preferably the bond date should be the same date as the contract, but in no case should the bond date precede the date of contract.

**To accompany the Construction Performance Bond (EJCDC No. 1910-28A) and the Construction Payment Bond (EJCDC No. 1910-2B)**

# Construction Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

## CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

## BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

## CONTRACTOR AS PRINCIPAL

Company: \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

## SURETY

Company: \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

## CONTRACTOR AS PRINCIPAL

Company: \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

## SURETY

Company: \_\_\_\_\_ (Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:
  - 3.1. The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and
  - 3.2. The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and
  - 3.3. The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
  - 4.1. Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or
  - 4.2. Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or
  - 4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or
  - 4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:
    1. After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, tender payment therefor to the Owner; or
    2. Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2, or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:
  - 6.1. The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
  - 6.2. Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and
  - 6.3. Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
8. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.
11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
12. Definitions.
  - 12.1. Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
  - 12.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
  - 12.3. Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.
  - 12.4. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

# Construction Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

## CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location):

## BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

## CONTRACTOR AS PRINCIPAL

Company:

(Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

## SURETY

Company:

(Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

## CONTRACTOR AS PRINCIPAL

Company:

(Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

## SURETY

Company:

(Corp. Seal)

Signature: \_\_\_\_\_  
Name and Title:

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.

2. With respect to the Owner, this obligation shall be null and void if the Contractor:

2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2. Defends, indemnifies and holds harmless the Owner from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.

4. The Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with the Contractor:

1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and

2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and

3. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.

5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.

6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:

6.1. Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract

and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2 (iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

#### 15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

15.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

(FOR INFORMATION ONLY—Name, Address and Telephone)

AGENT or BROKER:

OWNER'S REPRESENTATIVE (Architect, Engineer or other party):

**EXHIBIT B**

**CERTIFICATE OF INSURANCE**

Sullivan Hollow Tank Project

ATTACH CERTIFICATES OF INSURANCE  
TO THIS PAGE

**EXHIBIT C**

**SAMPLE NOTICE OF INTENT TO AWARD**

**SAMPLE NOTICE TO PROCEED**

Sullivan Hollow Tank Project

Joel A. Merrill, P.E.  
Lionel R. John Health Center  
987 R.C. Hoag Dr.  
Salamanca, New York 14779

Telephone (716) 945-5894 x5277

Email: joel.merrill@senecahealth.org

**NOTICE OF INTENT TO AWARD**

Date: \_\_\_\_\_  
Contract For: Sullivan Hollow Water Tank

To: \_\_\_\_\_

Address: \_\_\_\_\_

Gentlemen:

You are notified that your Bid dated \_\_\_\_\_, 20\_\_, for the above Contract has been considered. You are the apparent successful Bidder and are being considered for award of a contract for \_\_\_\_\_

The Contract Price of your contract is \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).

Four (4) copies (1 for OWNER; 1 for OWNER's Counsel; 1 for CONTRACTOR; 1 for ENGINEER) each of the conformed Project Manual, which together with the Drawings constitutes the proposed Contract Documents, will be delivered to you. Copies of the Drawings will be delivered separately or otherwise made available to you promptly, as provided in the Instructions to Bidders.

You must comply with the following conditions precedent within fifteen days of the date of receiving the Project Manual:

1. You must execute and deliver to the Owner all copies of the executed counterparts of the Agreement.
2. You must deliver the executed Contract Security (Bonds) as specified in the General Conditions (paragraph 5.1) and Supplementary Conditions (paragraph SC-5.1). The Bond forms are included at the end of the Agreement under Exhibit A.
3. You must deliver with the executed Agreement the required Certificates of Insurance, which are to be attached to Exhibit B. Insurance requirements are specified in Article 5 of the General Conditions and Article 5 of the Supplementary Conditions.

Failure to comply with these conditions within the time specified will entitle Owner to consider your bid abandoned, to annul this Notice of Intent to Award and to declare your Bid Security forfeited.

Within ten days after you comply with the above conditions, the Owner intends to return to you one of the executed Project Manuals, which will include the fully signed counterpart of the Agreement and such other attachments as may be required from the Owner.

OWNER: \_\_\_\_\_

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

(Authorized Signature)

Copy to Engineer

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

Sullivan Hollow Tank Project

Joel A. Merrill, P.E.  
Lionel R. John Health Center  
987 R.C. Hoag Dr.  
Salamanca, New York 14779

Telephone (716) 945-5894 x5277  
Fax (716) 945-5889  
Email: joel.merrill@senecahealth.org

**NOTICE TO PROCEED, SUSPEND, OR RESUME WORK ORDER**

Date issued: \_\_\_\_\_ Re: Owner's Contract No.: \_\_\_\_\_

Contract For: Sullivan Hollow Water Tank  
Project

To: \_\_\_\_\_

Address: \_\_\_\_\_

THIS IS YOUR NOTICE TO PROCEED, SUSPEND, OR RESUME WORK ON THE CONTRACT AS NOTED

**\_\_\_\_\_ NOTICE TO PROCEED**

THIS IS YOUR NOTICE TO PROCEED WITH THE WORK ON THE ABOVE CONTRACT FOR THE FOLLOWING ITEMS: \_\_\_\_\_

THE TIME OF THE CONTRACT WILL START AT THE BEGINNING OF BUSINESS ON \_\_\_\_\_

**SUSPENSION OF WORK**

YOUR ARE TO SUSPEND WORK FOR THE FOLLOWING REASONS: \_\_\_\_\_

EFFECTIVE CLOSE OF BUSINESS \_\_\_\_\_ ITEM NUMBERS \_\_\_\_\_

TYPE OF SUSPENSION: \_\_\_\_\_ TOTAL \_\_\_\_\_ PARTIAL  
\_\_\_\_\_ NO CHARGE WILL BE MADE AGAINST CONTRACT TIME FOR PERIOD OF SUSPENSION  
\_\_\_\_\_ FULL COUNT OF CONTRACT TIME WILL CONTINUE  
\_\_\_\_\_ AN EQUITABLE ADJUSTMENT OF CONTRACT TIME WILL BE MADE FOR THE PERIOD OF THE PARTIAL SUSPENSION UPON RESUMPTION OF WORK.

**DO NOT RESUME WORK UNTIL YOU ARE NOTIFIED TO DO SO IN WRITING**

**\_\_\_\_\_ RESUMPTION OF WORK**

ITEM NUMBERS \_\_ . EFFECTIVE BEGINNING OF BUSINESS \_\_\_\_\_ .

TIME CHARGED DURING PERIOD OF PARTIAL SUSPENSION \_\_\_\_\_ CALENDAR DAYS

**SIGNATURE:** \_\_\_\_\_ **TITLE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**PLEASE ACKNOWLEDGE RECEIPT BY RETURNING SIGNED COPY**

**SIGNATURE:** \_\_\_\_\_ **TITLE:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
  2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
  3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  5. *Bidder*—An individual or entity that submits a Bid to Owner.
  6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
  7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
  8. *Change Order*—A document 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, or other revision to the Contract, issued on or after the Effective Date of the Contract.
  9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
  10. *Claim*—(a) A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
27. *Notice to Proceed*—A written notice 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.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor’s plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or “RPR” includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *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.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire 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; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

## 1.02 Terminology

- A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:*
  1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, 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 exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the 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 is not intended to and 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 10 or any other provision of the Contract Documents.
- C. *Day:*
  1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:*
  1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
    - a. does not conform to the Contract Documents; or
    - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
    - c. 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 Paragraph 15.03 or 15.04).
- E. *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 word “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. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that 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 – PRELIMINARY MATTERS**

### **2.01 *Delivery of Bonds and Evidence of Insurance***

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

### **2.02 *Copies of Documents***

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

### **2.03 *Before Starting Construction***

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit 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;
  2. a preliminary Schedule of Submittals; 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.

#### 2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, 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 Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

#### 2.05 *Initial Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment 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 Paragraph 2.03.A. Contractor shall have an additional 10 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.
  1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
  2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
  3. 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 the component parts of the Work.

#### 2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

### **ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE**

#### **3.01 *Intent***

- A. The Contract Documents are complementary; what is required by one is as binding as if required 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.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

#### **3.02 *Reference Standards***

- A. Standards Specifications, Codes, Laws and Regulations
  - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, 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, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract 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, reference standard, 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 part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 part of the Contract Documents prepared by or for Engineer.

#### **3.03 *Reporting and Resolving Discrepancies***

- A. *Reporting Discrepancies:*
  - 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.
3. 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 had actual knowledge thereof.

B. *Resolving Discrepancies:*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
  - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
  - b. 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).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

### 3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
  - 1. have or acquire any title to 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 its consultants, including electronic media editions, or reuse any 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 adaptation by Engineer; or
  - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

## **ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK**

### 4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

### 4.02 *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 such date.

### 4.03 *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 requires 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.

### 4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 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 Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. 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, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

#### 4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
  2. abnormal weather conditions;
  3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
  4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

**ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS**

5.01 *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.
- 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 permanent improvements are to be made 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.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas:*

- 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
- 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all 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 directly or indirectly, in whole or in part

by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent 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 the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of 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 structures or land to stresses or pressures that will endanger them.

### 5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
  - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
  - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
  - 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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.

#### 5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
  2. is of such a nature as to require a change in the Drawings or Specifications; or
  3. differs materially from that shown or indicated in the Contract Documents; or
  4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly 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 Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, 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 fall within any one or more of the categories described in Paragraph 5.04.A;
    - 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 Paragraph 13.03; and,

- c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
  - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
  - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
  - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

#### 5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent 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. Unless it is otherwise expressly provided in the Supplementary Conditions:
  1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; 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 information and data regarding existing Underground Facilities at the Site;
    - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
    - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
    - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then 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 Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
  - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
    - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
    - 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 Paragraph 13.03;
    - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
    - d. Contractor gave the notice required in Paragraph 5.05.B.
  - 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
  - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings*: The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
  2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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 removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) 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. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. 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, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. 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, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, 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 (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 6 – BONDS AND INSURANCE

### 6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

### 6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is

maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

- D. Owner shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Owner has obtained and is maintaining the policies, coverages, and endorsements required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- E. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- G. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.
- H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- I. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.
- J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

### 6.03 *Contractor's Insurance*

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
  - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
  - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
  2. claims for damages insured by reasonably available personal injury liability coverage.
  3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage:
    - a. Such insurance shall be maintained for three years after final payment.
    - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
  2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
  3. Broad form property damage coverage.
  4. Severability of interest.
  5. Underground, explosion, and collapse coverage.
  6. Personal injury coverage.
  7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
  8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability:* Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
- E. *Umbrella or excess liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
- F. *Contractor's pollution liability insurance:* Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result

of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

- G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
- H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
- I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
  - 1. include at least the specific coverages provided in this Article.
  - 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
  - 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.
  - 4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
  - 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

#### 6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

#### 6.05 *Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
  - 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
  - 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.
  - 3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
  - 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
  6. extend to cover damage or loss to insured property while in transit.
  7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
  8. allow for the waiver of the insurer's subrogation rights, as set forth below.
  9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
  10. not include a co-insurance clause.
  11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
  12. include performance/hot testing and start-up.
  13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
- E. *Additional Insurance:* If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

## 6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
  - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
  - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.
- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

## 6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the

policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

## **ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES**

### *7.01 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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

### *7.02 Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction 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, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

### *7.03 Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, 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, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and

guarantees required 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.

- C. 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.

#### 7.04 "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 Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item 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 is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
  - 1. If Engineer in its sole discretion determines that 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, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, 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:
      - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
      - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
      - 3) it has a proven record of performance and availability of responsive service; and
      - 4) it is not objectionable to Owner.
    - b. Contractor certifies that, if approved and incorporated into the Work:
      - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
      - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

#### 7.05 *Substitutes*

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
  - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
  - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
  - 3. Contractor shall 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:
    - a. shall certify that the proposed substitute item will:
      - 1) perform adequately the functions and achieve the results called for by the general design,
      - 2) be similar in substance to that specified, and
      - 3) be suited to the same use as that specified.
    - b. will state:
      - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
      - 2) whether use of the 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 other work on the Project) to adapt the design to the proposed substitute item, and
      - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
    - c. will identify:
      - 1) all variations of the proposed substitute item from that specified, and

- 2) available engineering, sales, maintenance, repair, and replacement services.
- d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
- E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

#### 7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.

- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. 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.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.
- L. 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.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. 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
2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *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.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors 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 specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 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.

7.08 *Permits*

- A. Unless otherwise provided in the Contract Documents, 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 the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work

#### 7.09 *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.

#### 7.10 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall 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 performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.
- C. Owner or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

#### 7.11 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

#### 7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. 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. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, 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 Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
  - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
  - D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
  - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.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 at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
  - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
  - G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

#### 7.13 *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.

#### 7.14 *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.

#### 7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened 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.

#### 7.16 *Shop Drawings, Samples, and Other Submittals*

##### A. *Shop Drawing and Sample Submittal Requirements:*

1. Before submitting a Shop Drawing or Sample, Contractor shall have:
  - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
  - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
  - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
  - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

##### 1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. 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 Paragraph 7.16.D.

2. *Samples:*
  - a. Contractor shall submit the number of Samples required in the Specifications.
  - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.
3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, 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.
- C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.
- D. *Engineer's Review:*
  1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible 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 or to safety precautions or programs incident thereto.
  3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
  4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.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. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
  5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
  6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
  7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

1. 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 revisions other than the corrections called for by Engineer on previous submittals.
2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. 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.
- C. 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 review and approval of a Shop Drawing or Sample submittal;
  6. the issuance of a notice of acceptability by Engineer;
  7. any inspection, test, or approval by others; or
  8. any correction of defective Work by Owner.

- D. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

#### 7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, 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 the performance of the Work, provided that any such claim, cost, loss, or damage 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 but only to the extent caused by any negligent act or omission 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.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors 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 Paragraph 7.18.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 Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors 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.

#### 7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop

Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

## **ARTICLE 8 – OTHER WORK AT THE SITE**

### **8.01 *Other Work***

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. 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 such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, 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.

## 8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
  - 1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
  - 2. an itemization of the specific matters to be covered by such authority and responsibility; and
  - 3. the extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

## 8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all 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 damage, delay, disruption, or interference.

## **ARTICLE 9 – OWNER'S RESPONSIBILITIES**

### **9.01 *Communications to Contractor***

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

### **9.02 *Replacement of Engineer***

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

### **9.03 *Furnish Data***

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

### **9.04 *Pay When Due***

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

### **9.05 *Lands and Easements; Reports, Tests, and Drawings***

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

### **9.06 *Insurance***

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

### **9.07 *Change Orders***

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *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.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

**ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION**

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, 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.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. 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 the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

- A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, 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, control, 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 Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.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 Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs (if any) of which Engineer has been informed.

**ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK**

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
  - 1. *Change Orders:*
    - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
    - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
  - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes 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. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

#### 11.02 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

#### 11.03 *Unauthorized Changes 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, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

#### 11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. 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, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
  2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
  3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

- C. *Contractor's Fee*: When applicable, 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 Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
    - b. for costs incurred under Paragraph 13.01.B.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 Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
    - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
    - 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 credits 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 Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

#### 11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

#### 11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
  2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
  3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

#### 11.07 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. 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;
  2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
  3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
  4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety 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), 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.

**ARTICLE 12 – CLAIMS**

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
  - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
  - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
  - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
  - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
  - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

## **ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

### 13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
  1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
  2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
  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 on the Work. 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, workers' compensation, health and retirement benefits, bonuses, sick leave, and 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. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
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 workers, 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, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease 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, as 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 within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than 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. 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 communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *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, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by 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 Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here 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 Paragraph 13.01.B.

D. *Contractor's Fee:* When the Work as a whole 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, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, 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.

## 13.02 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 sums and by such persons or entities as may be acceptable to Owner and Engineer.

- B. *Cash Allowances*: Contractor agrees that:
  - 1. the cash 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, overhead, profit, and other expenses contemplated for the cash 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.
- C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. 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.

### 13.03 *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.
- B. 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. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. 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.
- D. 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 Application for Payment 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 the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price 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;
  - 2. there is no corresponding adjustment with respect to any other item of Work; and
  - 3. Contractor believes that it 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 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

### 14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

### 14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
  - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
  - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
  - 3. by manufacturers of equipment furnished under the Contract Documents;
  - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
  - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. 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, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

cover the same and Engineer had not acted with reasonable promptness in response to such notice.

#### 14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

#### 14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

#### 14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then 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, and provide all necessary labor, material, and equipment.
  - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages 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 pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
  - 2. If the uncovered 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 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, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

#### 14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

#### 14.07 *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, 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, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or 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, 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 paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. 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 because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

## **ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD**

### **15.01 Progress Payments**

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
  2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
  3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
  2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment 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, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
  - c. the 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:
    - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, 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; or
    - b. 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.
  4. 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:
    - a. to supervise, direct, or control the Work, or
    - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
    - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
    - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
    - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
  5. 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 stated in Paragraph 15.01.C.2.
  6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
    - a. the Work is defective, requiring correction or replacement;
    - b. the Contract Price has been reduced by Change Orders;
    - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
    - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner:*

- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
  - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
  - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
  - c. Contractor has failed to provide and maintain required bonds or insurance;
  - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
  - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
  - f. the Work is defective, requiring correction or replacement;
  - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
  - h. the Contract Price has been reduced by Change Orders;
  - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
  - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
  - k. 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;
  - l. there are other items entitling Owner to a set off against the amount recommended.
- 2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, 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, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

#### 15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by Owner.

#### 15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

#### 15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
  - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
  - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
  - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
  - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

#### 15.05 *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, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

#### 15.06 *Final Payment*

- A. *Application 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, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents;
  - b. consent of the surety, if any, to final payment;
  - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
  - d. a list of all disputes that Contractor believes are unsettled; and
  - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, 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, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

**B. *Engineer's Review of Application and Acceptance:***

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment 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 have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment 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 Application for Payment.

**C. *Completion of Work:*** The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

**D. *Payment Becomes Due:*** Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

#### 15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

#### 15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed 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 Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. correct the defective repairs to the Site or such other adjacent areas;
  - 2. correct such defective Work;
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written 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. 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 repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. 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.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, 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.

- E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

## **ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION**

### **16.01 *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 written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

### **16.02 *Owner May Terminate for Cause***

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and 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);
  - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
  - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
  - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that Owner is considering a declaration that Contractor is in default and termination of the contract, Owner may proceed to:
  - 1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
  - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, 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 complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses,

and damages exceeds 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 paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

#### 16.03 *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, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
  - 1. completed and acceptable 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. 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; and
  - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

#### 16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) 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 Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment 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 paragraph are not intended to preclude Contractor from submitting a Change Proposal 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 paragraph.

## **ARTICLE 17 – FINAL RESOLUTION OF DISPUTES**

### **17.01 *Methods and Procedures***

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this Article:
  - 1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and
  - 2. Disputes between Owner and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this Article, Owner or Contractor may:
  - 1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or
  - 2. agree with the other party to submit the dispute to another dispute resolution process; or
  - 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## **ARTICLE 18 – MISCELLANEOUS**

### **18.01 *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:
  - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
  - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

### **18.02 *Computation of Times***

- A. When any period of time is referred to in the Contract 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.

### **18.03 *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. The provisions of this paragraph 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.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

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

18.08 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

# Supplementary Conditions

## **SUPPLEMENTARY CONDITIONS**

### **INTRODUCTORY STATEMENT**

**Supplementary Conditions:** These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. 1910-8, 1990 Ed.) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in force and effect.

### **NOTES TO READER**

1. Insofar as format and arrangement of the material is concerned, these Supplementary Conditions follow the concepts of the "Guide to the Preparation of Supplementary Conditions," (Document EJCDC No. 1910-17, 1990 Ed.) prepared by the Engineer's Joint Contract Documents Committee.
2. Supplementary Conditions are arranged in the same order as the paragraphs in the General Conditions, and the paragraphs herein bear comparable numbers to those of the General Conditions, but with the prefix "SC." For brevity, paragraph numbers of the General Conditions when appropriate, are referred to herein with the prefix "GC."
3. The terms used in the Supplementary Conditions which are defined in the General Conditions of the construction contract (No. 1910-8, 1990 Ed.) have the same meanings assigned to them in the General Conditions.
4. Administrative procedures which accompany certain subjects covered under the General Conditions and Supplementary Conditions appear in Division 1 of the Specifications. This would apply, for example, to Change Orders and Shop Drawing Submittals.

### **ARTICLE 1-DEFINITIONS**

- A. Modify the existing definitions as follows:

SC-1.3 Application for payment: Replace the phrase "accepted by the ENGINEER" in paragraph 1.3 of the General Conditions with the phrase "provided by the ENGINEER.)

- B. Supplement existing definitions as follows:

SC-1.35 Add the following in the end of General Condition 1.35:

"Shop Drawings include the following:

1. Preprinted material such as illustrations, standard schedules, performance charts, instructions, brochures, diagrams, manufacturer's descriptive literature, catalog data and other data to illustrate a portion of the Work, but not prepared exclusively for this Contract.

2. Drawings, schedules, diagrams and other data prepared specifically for this Contract, by the Contractor or through the Contractor by way of a subcontractor, manufacturer, supplier, distributor or other lower tier contractor, to illustrate a portion of the Work.”

SC-1.37 Subcontractor: Delete the phrase, ”at the site” from the entire paragraph.

C. Add the following definitions:

SC-1.46 Bid Item Description – A separate description of each Bid item

SC-1.47 Work terminology: the following definitions are intended to supplement paragraph 1.43 of the General Conditions:

1. Furnish or Supply: To supply, deliver, and unload materials and equipment at the project site and inspect for damage.
2. Install: To unpack, place, assemble, erect, apply, finish, cure, protect, and clean furnished materials and equipment in secured position ready for the intended use.
3. Provide: To furnish or supply, and install.
4. Products: New material, machinery or components, equipment, fixtures, and systems forming the Work. It does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components, if specifically identified for reuse in the Contract Documents.

SC-1.48 Site: The lands upon which work is to be performed. The limits of such lands may be indicated elsewhere in the Contract Documents.

SC-1.49 “As-Shown”: Whenever, in the description of any part of the Work, the expression AS SHOWN, SHOWN ON THE PLANS, or similar expressions are used, it shall be understood in to mean as shown on the Contract Drawings, unless another meaning is plainly indicated.

SC-1.50 Nation – The Seneca Nation of Indians, a federally recognized Indian Tribe.

SC-1.51 THPO – The Seneca Nation of Indians Tribal Historic Preservation Officer

Policies and Procedures, attached hereto as Exhibit GC-A.

SC-1.52 TERO – The Seneca Nation of Indians Tribal Employment Rights Ordinance, attached hereto as Exhibit GC-B.

### **ARTICLE 3 - PRELIMINARY MATTERS**

#### **Copies of Documents**

SC-2.2 Delete paragraph 2.2 of the general Conditions in its entirety and insert the following in its place: “OWNER will furnish copies of the Contract Documents to CONTRACTOR as follows:

Three sets each of full-size drawings and project manual with attachments.

Additional copies of Contract Documents or a copy of reproducible documents may be purchased at ENGINEER’S normal rates for reproduction.

The copies of Contract Documents furnished to CONTRACTOR after signing of Agreement will be revise by ENGINEER to incorporate the requirements of any issued Addenda throughout the drawings and the project manual, rather than issuing copies of the Addenda as separate instructions. The incorporation of Addenda will be done solely to improve efficiency of the construction process and will have no effect on the requirements of the Contract. In the event of a disagreement between the documents distributed after signing of the Agreement (which have the Addenda incorporated throughout the documents) and the documents forming the original signed Agreement (which will be identical to those distributed during bidding), the documents forming the original signed Agreement shall take precedence. Refer to Supplementary Condition 2.5 regarding Contractor’s responsibility to verify that the addenda have been accurately incorporated in the documents prior to using those documents.’

#### **Commencement of Contract Time; Notice to Proceed**

SC-2.3 Amend the last sentence of paragraph 2.3 of the general Conditions by striking the phrase “later than the sixtieth day” and adding the phrase “later than the seventy-fifth day”; and as so amended, paragraph 2.3 remains in effect.

#### **Before Starting Construction**

SC-2.5 Add the following sentence at the end of the paragraph: “CONTRACTOR’s study and checking of the Contract Documents shall include his/her independent verification that the addenda have been accurately and completely incorporated into the Contract Documents prior to relying on those documents. Accordingly, Contractor assumes the full risk of working from addenda-incorporated documents.”

SC-2.61 Delete paragraph 2.6.1 of the General Conditions in its entirety and insert the following

In its place:

“a preliminary progress schedule indicating the times (dates) for starting and completing the various stages of the Work. Schedule shall include and Milestones specified in the Contract Documents, shall consider timer required for submission and approval of the shop drawings and sample submittals and for manufacturing lead times and product delivery dates, and shall contain at least the level of detail and other characteristics as identified in the Contract Documents.”

SC-2.6.2 Add the following to the end of paragraph 2.6.2 of the General Conditions:

“Schedule shall allow a minimum of ten working days for ENGINEER’s review after receipt of each submittal and resubmittal (excluding time for transmittal). In preparing schedule, CONTRACTOR shall discuss individual submittal requirements with the ENGINEER and shall increase the minimum time allowance for review of complex or voluminous submittals.”

SC-2.7 Amend the first sentence of paragraph 2.7 of the General Conditions by striking out the following words “Before any work at the site is started . . .,” and adding the words “Before the Effective Date of the Agreement,” and as so amended, paragraph 2.7 remains in effect.

#### **Preconstruction Conference**

SC-2.8 Amend the first sentence of paragraph 2.8 of the General Conditions by striking out the following words “attended by CONTRACTOR, ENGINEER and others as appropriate,” and adding the following sentence at the end of paragraph 2.8 of the General Conditions: “Present at the conference will be OWNER or his representative, ENGINEER, Resident Project Representative, CONTRACTOR and his Superintendent, and other invited parties or government representatives having jurisdiction over or official interest in the project and others as appropriate.”

#### **Initially Acceptable Schedules**

SC-2.9 Change the fourth sentence to read:

“The progress schedule will be acceptable to ENGINEER if it contains at least the specified level of work detail and characteristics and provides for an orderly progression of the Work to completion within any specified milestones and Contract times. Such acceptances will not impose on ENGINEER responsibility for the sequencing, scheduling or progress of the Work not interfere with or relieve CONTRACTOR from CONTRACTOR’s full responsibility therefor.”

### **ARTICLE 3-CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE**

SC-3.3.1 Insert the word “applicable” in front of the term “Laws and Regulations” as the same appears in paragraph 3.3.1.

### **ARTICLE 4-AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERNCE POINTS**

#### **4.2 Subsurface and Physical Conditions**

SC-4.2 No reports or drawings were utilized by ENGINEER in preparation of Drawings and Specifications.

#### **4.5 Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material.**

Add the following sub-paragraph after SC-4.5.1.

“SC-4.5.1 OWNER is unaware if the existence if any PCBs, petroleum, hazardous waste or radioactive material within the Scope of Work at the site.”

SC 4.5.4 Delete paragraph 4.5.4 of the General Conditions in its entirety.

**ARTICLE 5 – BONDS AND INSURANCE**

**Performance, Payment and other Bonds**

SC-5.1 Insert the word “applicable” in front of the term “Laws and Regulations” as the same appears in paragraph 5.1.

Add the following language at the end of paragraph 5.1 of the General Conditions:

“CONTRACTOR and surety shall jointly complete and execute the Performance and Payment Bond forms included at the end of the Agreement.”

**CONTRACTOR’s Liability Insurance**

SC-5.4 The limits of the liability for the insurance required by paragraph 5.4 of the General Conditions shall provide for coverages for not less than the following amounts or greater where required by applicable Laws and Regulations:

5.4.1 and 5.4.2 Worker’s Compensation, etc., under paragraphs 5.4.1 and 5.4.2 of the General Conditions, in accordance with the statutory requirements of the jurisdiction in which the services are to be performed; and Employer’s Liability Insurance with limits not less than \$1,000,000 each accident or death of an employee engaged in the Work hereunder.

5.4.3, 5.4.4 and 5.4.5 CONTRACTOR’s Liability Insurance under paragraphs 5.4.3 through 5.4.5 of the General Conditions which shall also include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody and control of the CONTRACTOR:

- (1) General Aggregate (except Products-Completed Operations): \$1,000,000
- (2) Products-Completed Operations Aggregate: \$1,000,000
- (3) Personal and Advertising Injury (Per Person/Organization) \$1,000,000
- (4) Each Occurrence (Bodily Injury and Property Damage) \$1,000,000
- (5) Property Damage liability insurance will provide Explosion, Collapse and Underground coverages where applicable
- (6) Excess Liability:
  - General Aggregate \$1,000,000
  - Each Occurrence \$1,000,000

5.4.6 Including:

Automobile Liability:

- (1) Bodily Injury: \$500,000 per person; \$1,000,000 Each Accident
- Property Damage \$1,000,000 Each Accident
- OR
- (2) Combined Single Limit (Bodily Injury & Property Damage):
- \$1,000,000

SC-5.4.7 OWNER, ENGINEER shall be listed as additional insureds. The policies shall be endorsed to provide that the coverage to the additional insureds is primary and non-contributory.

SC-5.4.10 The Contractual Liability coverage required by paragraph 5.5.10 of the General Conditions shall provide coverage for not less than the following amounts:

- |   |             |
|---|-------------|
| (1) General Aggregate                                   | \$1,000,000 |
| (2) Each Occurrence (Bodily Injury and Property Damage) | \$1,000,000 |

SC-5.4.11 The provisions or endorsements necessary to comply with paragraphs 5.4.11 of the General Conditions shall include the obligation to notify the OWNER and ENGINEER when an aggregate limit of liability required or certified has been reduced by the payment of claim(s). ENGINEER shall also be notified 30 days in advance of any cancellation in coverage.

## **5.6 Property Insurance**

Delete the first sentence of paragraph 5.6 of the General Conditions and replace with the following:

“OWNER shall purchase and maintain or cause to be purchased and maintained property insurance upon the Work and the Property to the full insurable value thereof from a company or companies authorized to do business in the jurisdiction in which the Property is located.

SC-5.7 Insert the word “applicable” in front of the terms ‘Laws and Regulations’ as the same appears in paragraph 5.7.

SC-5.11.2 Delete paragraph 5.11.2 of the General Conditions in its entirety.

## **ARTICLE 6-CONTRACTOR’S RESPONSIBILITIES**

### **6.3 Payment of Minimum Wage Rates**

Add the following subparagraph to paragraph 6.3 of the General Conditions:

‘SC-6.3.1 The CONTRACTOR and every subcontractor shall pay employees no less than the wage rates published for each trade or occupation listed in the Davis-Bacon Prevailing Wage Rate Schedule, available at <http://www.wdol.gov/Index.aspx> as the same may be supplemented, changed or amended. In no case shall CONTRACTOR be entitled to any additional compensation or extras because of any supplement, change, redetermination or amendment of the Davis-Bacon Prevailing Wage Rate Schedule.

### **Progress Schedule**

SC-6.6.1 Delete paragraph 6.6.1 of the General Conditions in its entirety and insert the following in its place:

“CONTRACTOR shall submit to ENGINEER for acceptance proposed adjustments in the progress schedule that will not change the Contract Times (or Milestones). Such adjustments shall conform generally to the progress schedule then in effect and additionally shall comply with any provisions of the General Requirements applicable thereto. ENGINEER’s acceptance will not impose on ENGINEER responsibility for the sequencing, scheduling or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR’s full responsibility therefor. ENGINEER’s review to determine acceptability will be limited to future activities only. By accepting the revised schedule, ENGINEER does not indicate acceptance of any historic information shown thereon.”

### **6.7 Substitutes and “Or Equal” Items.**

SC-6.7.1.2 Substitute Items: Add the following language at the end of paragraph 6.7.1.2 of the General Conditions:

“If the substitute item requires no modifications to the structures, piping, layouts, etc., detailed on the drawings, the application shall also include details of proposed modifications necessary to accommodate the substituted item. Such details shall include scaled layouts, dimensions and other pertinent information to enable the ENGINEER to accurately assess the entire application. If the substitute item and proposed modifications are approved, the CONTRACTOR, at no additional cost to the OWNER, shall do all work necessary to make such modifications and absorb all costs of any related changes imposed on other CONTRACTORS. Final details of such modifications shall be prepared and submitted by the CONTRACTOR for approval under the Shop Drawing requirements specified elsewhere.”

SC-6.7.1.3 CONTRACTOR’s Expense: Add the following language at the end if subparagraph 6.7.1.3 of the General Conditions:

“In order to aid ENGINEER in determining the equality of a proposed “or equal” or substitute item (when compared to the item actually specified), the CONTRACTOR shall arrange for the performance of any tests requested by the ENGINEER. ENGINEER shall determine the nature, extent, tester and degree of supervision of such tests. Certified test results shall be mailed directly to the ENGINEER for all tests requested. All costs of such tests, including engineering costs, shall be borne by the CONTRACTOR.”

## **6.8 Concerning Subcontractors, Suppliers and Others:**

SC-6.8.1 Add the following language to the end of paragraph 6.8.1 of the General Conditions:

“Rejection by OWNER or ENGINEER of a proposed supplier or manufacturer of a particular item of material or equipment other than the suppliers(s) or manufacturer(s) named in the Specification for the item does not constitute grounds for “reasonable objection” by CONTRACTOR or for any adjustment in his Contract Price or time of completion; such proposal constitutes a substitution and must be processed in accordance with the procedures and requirements of Paragraph(s) 6.7 of the General Conditions and Supplementary Conditions.”

SC-6.8.2 Add the following language to the end of paragraph 6.8.2 of the General Conditions:

“However, no increase in Contract Price will be allowed to cover a substitute if acceptance is revoked by ENGINEER or OWNER:

- a. Of a supplier, person or organization who cannot meet the specifications covering the item of material or equipment which he is to furnish, or

- b. Of a subcontractor identified on CONTRACTOR’s list who cannot perform the work designated by such listing for legal reasons including but not limited to the fact the subcontractor is unlicensed to perform that particular aspect of work or is blacklisted because of labor violations.”

SC-6.9.1 Insert the word “applicable” in front of the term “Laws and Regulations” as the same appears in paragraph 6.9.1.

### **6.13 Permits**

SC-6.13 Add the following sentence to paragraph 6.13 of the General Conditions

“When construction permits are accompanied by regulations or requirements issued by a particular authority or agency, it shall be the CONTRACTOR’s responsibility to familiarize himself and comply with such regulations or requirements as they apply to his operations on the project.”

### **6.14 Laws and Regulations**

SC-6.14.2 Insert the word “applicable” in front of the term “Laws and Regulations” as the same appears in paragraph 6.14.2.

### **Taxes**

Add the following subparagraph to GC-6.15

SC-6.15.1 “The OWNER is exempt from payment of Sales and Compensating Use Taxes of the State of New York and of cities and counties on all materials, equipment and supplies to be sold to the OWNER pursuant to this Contract. Also exempt from such taxes are purchases by the CONTRACTOR and his subcontractors of materials, equipment and supplies to be sold to the OWNER pursuant to his Contract, including tangible personal property to be incorporated in any building, structure or other real property forming part of this project.”

## **Use of Premises**

SC-6.16 Insert the word “applicable” in front of the term “Laws and Regulations” as the same appears in paragraph 6.16.

Add SC-6.18.1 as follows:

CONTRACTOR recognizes that OWNER adheres to the Seneca Nation of Indians Tribal Historic Preservation Officer Policies and Procedures (THPO), a copy of which is attached hereto as exhibit GC-A. CONTRACTOR recognizes that the Nation’s THPO will be incorporated in all contracts pertaining to the construction of the Project. CONTRACTOR, including its Subcontractors and Suppliers, will be required to comply with the requirements of the THPO, including the strict adherence to THPO protocol in the event of a discovery human remains and associated funerary objects.

## **6.19 Record Documents**

SC-6.19 Delete the last sentence of General Conditions 6.19 and replace with the following:

“Prior to CONTRACTOR notifying ENGINEER that the entire work is substantially complete, CONTRACTOR shall deliver to ENGINEER for OWNER one copy of current record documents and required operation and maintenance data relating to the portion of the project being utilized. CONTRACTOR shall submit said documents prior to OWNER accepting the portion of the project to be used as substantially complete.”

## 6.20 Safety and Protection

SC-6.20 Add the following language to the end of General Condition GC-6.20:

“Site Safety Responsibilities and Roles.

It is the objective of the OWNER that the CONTRACTOR maintain all construction worksites in a safe, neat and orderly condition, and free from human hazard. It is the policy of the OWNER that if an unsafe condition is encountered, the affected activity shall be suspended until the unsafe condition is corrected.

As clearly stated in the Contract Documents, the CONTRACTOR has the sole responsibility for ensuring that the construction worksite is safe, neat and maintained in an orderly condition, and is free from human hazard. The CONTRACTOR is also solely responsible by law for compliance, and regulatory reporting requirements, for all workplace and employee safety issues.

The CONTRACTOR’s designated On Site Safety Representative will be the sole point-of-contact for all safety issues and shall have the authority to stop the work and implement corrective procedures.

The CONTRACTOR is required to have a Project Safety Plan. The Project Safety Plan shall outline the CONTRACTOR’s actions that will ensure that the project site is maintained in a safe, neat and orderly condition, and is free from human hazard. The Project Safety plan shall also contain written procedures for the CONTRACTOR’s compliance with government safety laws and associated reporting requirements.

At a minimum, the Project Safety Plan should include the following:

- Project Safety Objective Statement
- Safety Responsibilities and Roles within Contractor’s Organization
- The Contractor Safety Policy Requirements for Subcontractors
- Mandatory Guidelines for the use of Personal Protective Equipment
- Emergency Response Procedures including routes to nearest hospitals
- Procedures for reporting accidents
- Site security procedures
- Procedures for Government Agency Compliance Reporting
- Procedures for the Protection of the general public
- Procedures for the protection of project site visitors
- Safety procedures related to the maintenance and protection of traffic
- Hazard communication program
- Confined space program
- Lockout and ground fault protection procedures
- Identification of the proposed Site Safety Representative and Competent Person, including credentials.
- Hazard analysis for all major work items
- Rigging and crane safety procedures
- Statement acknowledging that the Contractor is solely responsible for construction worksite safety issues.

## **Emergencies**

SC-6.23 Add the following language at the end of paragraph 6.23 of the General Conditions

“CONTRACTOR shall designate one person to respond to emergencies and act on the CONTRACTOR’s behalf during off-work hours at the project site. The person’s name, address, 24 hour telephone number, shall be provided to the POWNER during the preconstruction conference and the designated person shall be on call during off-work hours. Response time shall not exceed one hour after notification is given by OWNER or ENGINEER that an emergency exists at the project site.”

## **Submittal Procedures:**

Paragraph 6.25.2 of the General Conditions is deleted and replaced with the following:

SC-6.25.2 Each submittal shall be stamped with the following certification statement, signed and dated by the Contractor’s designated representative:

“Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all contract requirements.’

## **Shop Drawing Review:**

Add the following subparagraph to GC-6.26:

SC-6.26.1 The terms appearing on ENGINEER’s Shop Drawing Review Stamp denote results of ENGINEER’s review of CONTRACTOR’s submitted data have the following meanings, including procedures for disposition of the various copies of such data:

- a. “Approved” if no change or rejection is made.
- b. “Approved as Noted” if minor changes or additions are made, but resubmittal is not considered necessary.
- c. “Revise and Resubmit” if changes requested are extensive. In this case, resubmittal after correction is necessary and the same number of copies shall be included in the resubmittal as the first submittal.
- d. “Rejected” if it is considered that the data submitted cannot with reasonable revision meet the requirements of the Plans and Specifications.
- e. “Submit Specified Item” if the data submitted is not clear, complete, or for other reasons cannot be examined by the ENGINEER to establish compliance with the Plans and Specifications.

Add the following language to paragraph 6.28 of General Conditions:

If such related Work is unacceptable to ENGINEER, or is incompatible with or does not conform to the requirements of the subsequently reviewed Shop Drawings, CONTRACTOR shall correct or replace such Work at his own expense as well as the Work of other contractors whose work is affected in any way.

## **CONTRACTOR’S General Warranty and Guarantee**

Add SC-6.30.3 as follows:

“CONTRACTOR acknowledges the sovereignty of the Seneca Nation of Indians (the “Nation”) separate and apart from the United States and state and local governments. CONTRACTOR shall not communicate in any way, directly or indirectly, with any federal, state or local government or other instrumentality relating to any matter related to the Contract Documents or the Work, except to the extent it has received the prior written authorization of the OWNER. This prohibition is intended to and shall extend to all those acting through or under CONTRACTOR, including but not limited to any Subcontractors or Suppliers. Notwithstanding any other provision of this Agreement, any failure to comply with this Section 6.30.3 shall constitute a default of this Agreement by CONTRACTOR and OWNER shall have the right to terminate this Agreement under paragraph 15.2 and pursue any and all other rights available at law or in equity.”

### **Indemnification**

SC-6.31 Insert the word “applicable” in front of the term “Laws and Regulations” as the same appear in the first sentence of paragraph 6.31.

## **ARTICLE 7 – OTHER WORK**

### **Related Work at Site:**

SC-7.1 Add the following subparagraph to 7.1 of the General Condition:

“SC-7.1.1 OWNER does not anticipate letting other direct contracts for the project.

SC-7.1.2 OWNER does not anticipating performing any work on the project with his  
Own forces.”

### **Coordination:**

SC-7.4 Add the following language to General Condition 7.4:

“OWNER does not anticipate letting other direct contracts for the project.”

## **Article 9 – ENGINEER’S STATUS DURING CONSTUCTION**

### **Decisions on Disputes:**

Amend paragraph 9.11 of the General Conditions as follows:

Change the phrase in brackets, which appears in the thirteenth line to read: “(but in no event later than ten days).”

Change the sixteenth line to read: “within forty-five days after the start of such occurrence or event.”

Strike the sentence beginning with “ENGINEER’S written decision on such claim, dispute or other matter will be final....” And replace with the following language:

“ENGINEER’S written decision on such claim, dispute or other matter will be final and binding upon OWNER and CONTRACTOR but subject to mediation as provided in Article 16. Either party may file for mediation of the ENGINEER’S written decision is issued. Either party may, within 30 days from the date of an ENGINEER’S decision is issued, demand in writing that the other party file for mediation within 60 days of the ENGINEER’S decision. If such a demand is made and the party receiving the demand fails to file for mediation within the time required, then both parties waive their rights to mediate with respect to the ENGINEER’S decision.”

SC-9.12 Insert the word “applicable” in front of the term ‘Laws and Regulations’ as the same appears in the last sentence of 9.12.

## **ARTICLE 10 – CHANGES IN THE WORK**

No changes to the General Conditions

## **ARTICLE 11 – CHANGE OF CONTRACT PRICE**

SC-11.2 Notice of Claim and Supporting Data

Amend paragraph 11.2 of the General Conditions, as follows:

Change the phrase in brackets, which begins on the fifth line, to read: “(but in no event later than ten days).”

Change the first part of the third sentence, which begins on the seventh line, to read: “Notice of the amount of the claim with supporting data shall be delivered within forty-five days after the start of the occurrence...etc.”

SC-11.3 through SC-11.7 Cost of Work and CONTRACTOR’S Fee

Delete all paragraphs 11.3 through 11.7 of the General Conditions and substitute in their place the following:

11.3 The value of any work covered by a Change Order or any claim for an increase or decrease in the Contract Price shall be determined by one of the following method:

1. By such applicable unit prices, if any, are set forth in the Contract; or
2. If no such unit prices are set forth, then by unit prices or by lump sum mutually agreed

Upon by the OWNER and the CONTRACTOR; such unit or lump sum being arrived at

By estimates of reasonable value prepared in general conformance outline set forth in

Paragraph 3 below or

3. Where there are no applicable unit prices and agreed lump sum prices cannot be readily Established or substantiated, the CONTRACTOR shall be paid the actual and reasonable cost of:
  - a. Necessary materials (including transportation to the site). Material used, if acquired by direct purchase, must be covered by receipted bills or acceptable invoices. All prices on used material incorporated in either temporary or permanent work shall be billed at the fair value, less the original cost when new. A reasonable salvage credit shall be given for all salvageable material recovered. Salvage value of substantial material recovered must be determined jointly by the CONTRACTOR and the ENGINEER'S; plus
  - b. Necessary direct labor charges. Each class of labor shall be billed separately at actual payroll rates. Average rates based on different classes of labor, will not be accepted; plus
  - c. Payments required to be made to labor organizations under existing labor agreements; plus
  - d. Equipment and plant rentals, other than small tools; plus
  - e. Compensation for profit and overhead as prescribed in paragraph 11.4

In calculating the cost of equipment and plant rentals, the base hourly rates shall be the daily rate as listed in the current Rental Rates for Construction Equipment prepared by the Associated Equipment Distributors divided by eight (8); Thereafter

The first 20 hours will be paid at 90% of the above base hourly rate; for 21 to 40 hours, the rate will be 80% of the above base hourly rate; and

For over 40 hours, the rate will be 45% of the above base hourly rate.

The number of hours to be paid for shall be the number of hours that the equipment or plant is actually used in performing the work of the Change Order.

Equipment to be used by the CONTRACTOR shall be specifically described and be of suitable size and suitable capacity required for the work to be performed. In the event the

CONTRACTOR elects to use equipment of a higher rental value than that suitable for the work, payment will be made at the rate applicable to the suitable equipment. The equipment actually used and the suitable equipment paid for will be recorded as part of the record for the work performed. The ENGINEER will determine the suitability of the equipment. If there is a differential in the rate of pay of the operator of oversized or higher rate equipment, the rate paid for the operator of the oversized or higher rate equipment, the rate paid for the operator will likewise be that of the suitable equipment.

In the event that a rate is not established in the Associated Equipment Distributors Rental Rates for a particular piece of equipment or plant, the OWNER shall establish a rate for that piece of equipment or plant that is consistent with its cost and use.

It is mutually understood that the base daily rate include all costs incidental to the equipment and plant rentals including cost of moving to and from site.

11.4 If methods 2 or 3 are used, the CONTRACTOR may add twenty % (20%) to the total

Cost of material, equipment, plant rentals and direct labor, as his only compensation for profit and overhead, except that the 20% shall not be applied to the premium portion of overtime pay.

If any of the work is performed by a subcontractor, the CONTRACTOR shall be paid the actual and reasonable cost of such subcontracted work computed as outlined above or on such other basis as might be approved by the OWNER, plus an additional allowance of five% (5%) to materials and direct labor to cover the CONTRACTOR'S profit, superintendence, administration, insurance, and other overhead. The cost of the premium portion of overtime pay shall be excluded when computing the above described charges for profit and overhead.

11.5 Overhead may be defined to include the following items:

1. Premium on bond;
2. Premium on insurance required by the State, Workmen's Compensation Insurance, public liability and property damage insurance, unemployment insurance, Federal old age benefits, other payroll taxes and such reasonable charges that are paid by the CONTRACTOR pursuant to written agreement with an employee;
3. All salary and expenses of executive officers, supervising or supervising Employees;
4. All clerical or stenographic employees;
5. All charges for minor equipment, such as hand tools, small hand held power tools, Including shovels, picks, axes, saws, bars, sledges, lanterns, jacks, cables, pails, Wrenches, etc. and other miscellaneous supplies and services including ladders, Scaffolds, safety equipment, reusable forms, administrative or personal vehicles or Equipment; and

6. All drafting room accessories such as paper, tracing cloth, blue printing, etc.

11.6 Regardless of the method of payment (1, 2, or 3), the CONTRACTOR will be required to submit evidence satisfactory to the OWNER to substantiate each and every item that constitutes his proposal of the value of the change.

The OWNER will determine by which of the methods, 1, 2, or 3, the value of the change shall be computed.

The provisions hereof shall not affect the power of the CONTRACTOR to act in case of emergency as provided elsewhere in the General Conditions.

11.7 In computing the value of a Change Order (under methods 2 or 3), which involves additions and deductions of work:

1. If the cost of the added work exceeds the cost of the omitted work, CONTRACTOR'S overhead and profit shall be computed on the amount by which the added work exceeds the omitted work.
2. If the cost of the omitted work exceeds the cost of the added work, the CONTRACTOR will be allowed to retain the overhead and profit on the amount by which the omitted work exceeds the added work.

#### **SC-11.9.2 Unit Price Item Description**

Add the following language to paragraph 11.9.2 of the General Conditions

"Each Unit Price Item has a Unit Price Bid Item Description Page which lists the work included under that item and certain other parameters, the details of which appear in the General Requirements if Unit Price work is utilized on the project. Discrepancies or omissions in the Unit Price Item Descriptions shall not be construed as relieving the CONTRACTOR of the responsibility of performing the entire work included in his Contract as shown on the Contract Drawings and described in the Specifications at the bid unit prices, without increases. If it is found that some aspect of the work required under this Contract was not listed in any of the Unit Price Item Descriptions, the ENGINEER shall determine under which of the existing unit price items the work shall be paid."

#### **ARTICLE 12-CHANGE OF CONTRACT TIMES**

SC-12.1 Notice of Claim and Supporting Data

Amend paragraph 12.1 of the General Conditions, as follows: Replace the crossed out phrase in the parenthesis, which begins on the fifth line with: "(but in no event later than ten days)."

Change the first part of the third sentence, which begins on the ninth line, to read: "Notice of the extent of the claim with supporting data shall be delivered within forty-five days after such occurrence...etc"

Delete paragraph 12.3 in its entirety and replace with the following:

Where CONTRACTOR is prevented from completing any part of the work within the Contract Times (or Milestones) due to delay beyond the control of the CONTRACTOR or CONTRACTOR'S subcontractors and/or

suppliers, 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 therefore as provided in paragraph 12.1 Delays beyond the control of the Contractor, its Subcontractors and its Suppliers shall include, but may not be limited to, acts or neglect of utility workers or other contractors performing other work not under the supervision of CONTRACTOR as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions that CONTRACTOR could not foresee or defend against or acts of God. Delays attributable to and within the control of a subcontractor or supplier shall be deemed to be delays within the control of the CONTRACTOR.

## **ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF**

### **DEFECTIVE WORK**

#### **Access to Work**

SC-13.2 Add the OWNER’S CONSULTANT as a party who will have access to the work.

#### **Tests and Inspections**

SC-13.5 Add the following language to paragraph 13.5 of the General Conditions:

“ Inspectors and testing laboratories shall be acceptable to ENGINEER, and CONTRACTOR shall submit evidence of their qualifications to ENGINEER prior to any inspections or tests, if requested by ENGINEER,”

#### **Correction Period**

SC-13.12.2 Add the following phrase to the last sentence of the subparagraph 13.12.2 of the General Conditions:

“or if set forth in the Partial Certificate of Substantial Completion issued under paragraphs SC-14.10.”

SC-13.12.3 Add the following language to subparagraph 13.12.3 of the General Conditions:

A new one year correction period shall commence to run on the date when CONTRACTOR replaces “defective” work with “non-defective” work, but such guarantee shall apply only to the actual components of the work newly installed as a result of the corrective action.

All related components of the work not showing defect shall be exempt from the additional guarantee, except that the original guarantee on a related component shall be extended for a period of time corresponding to the period of non use of such component if it cannot be used or placed in service due to the condition of the original “defective” work, and/or for the time period that such component is taken out of service in order to replace the “defective” work.

## **ARTICLE 14 – PAYMENT TO CONTRACTOR AND COMPLETION**

SC-14.2 Application for Progress Payment

Add the following paragraphs to paragraph 14.2 of the General Conditions:

“Subject to the OWNERS approval, ENGINEER will establish a uniform cut-off date for each month to determine the dollar value of the completed work and the amount of payment to CONTRACTOR covering his operations during the preceding period”

“CONTRACTOR may request payment for delivered materials and equipment if he can demonstrate to OWNER’S satisfaction that such item(s) are those required for incorporation in the work and that the following submittals are valid and in proper order:

1. If the materials or equipment are delivered on or off the site, this application for payment shall be accompanied by the following:
  - a. Invoice or Bill of Sale from supplier or manufacturer showing destination, inventory or description, and dollar value of item(s) delivered.
  - b. Packing slip showing date of delivery and carrying a notation by ENGINEER, Resident Project Representative, or OWNER’S REPRESENTATIVE to the effect that the item(s) is in satisfactory condition and has been satisfactorily stored. Such notation shall not be construed as final acceptance of the item(s).
  - c. Proof of property damage insurance coverage in the amount of 100 percent of the value of the stored item(s). As a minimum, the certificate shall name not only the CONTRACTOR, but also the OWNER (as Additional Named Insured) to provide fire, extended coverage, vandalism and malicious mischief insurance for the stored items(s).
  
2. If the materials or equipment are delivered to an off-site warehouse, which must be located Within a reasonable distance of the site, the following additional data must accompany the application:
  - a. In lieu of the packing slip (above), a copy of the shipping receipt from the warehouse indicating that the item(s) was delivered and stored at the warehouse, including date of delivery and inventory listing thereof. The receipt shall carry a notation by ENGINEER, Resident Project Representative, [or OWNER’S Representative] to the effect that the item(s) is in satisfactory condition and has been satisfactorily stored. Such notation shall not be construed as final acceptance of the item(s).
  - b. Copy of letter from CONTRACTOR to the warehouse directing that the stored item(s) not be released except upon authorization of both CONTRACTOR, ENGINEER, Resident Project Representative, or OWNER’S Representative.
  - c. Letter from CONTRACTORS surety company to ENGINEER consenting to payment for the stored item(s) in accordance with the Contract Documents. This letter must identify the item(s) for which consent is given.

3. The amount requested for payment of stored materials or equipment shall not include any of the CONTRACTORS overhead, profit, or any other unrelated costs, and shall not exceed the price indicated for the item in the Schedule of Values submitted by the CONTRACTOR.”

### **Review of Application for Progress Payment**

SC-14.7 Add the following language in front of the first sentence of General Conditions paragraph 14.7:

“ENGINEER will refuse to recommend any payment, regardless of amount otherwise due, unless any updated progress schedule required by the Contract Documents has been submitted by CONTRACTOR and found acceptable to ENGINEER”

Add the following language to the subparagraph 14.7 of the General Conditions, as follows:

SC-14.7.4 Add the following language to the end of subparagraph 14.7.4: “or contractor has failed to submit certifications, affidavits, schedules, or other written information when as required in the Contract Documents, or CONTRACTOR has failed to submit shop drawings in accordance with the shop drawing schedule”

Add the following new subparagraph immediately after subparagraph 14.7.8 of the General Conditions:

“SC-14.7.9 Liability for liquidated or other damages contained or referenced herein has been incurred by the CONTRACTOR”

### **Substantial Completion**

SC-14.8 Delete the first sentence of General Condition 14.8 and replace with the following

“When CONTRACTOR considers the entire Work ready for its intended use, and after completion of required instruction of OWNER’S personnel in proper operation and maintenance of the Work and delivery of current record documents and operation & maintenance data to ENGINEER for OWNER in accordance with General and Supplementary Condition 6.19, CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that the ENGINEER issue a certificate of Substantial Completion.”

Add the following new subparagraph immediately after SC-14.8:

“SC-14.8.1 Once the project is deemed substantially complete in accordance with paragraph 14.8 of the General Conditions, Contractor shall apply for its next progress payment request, and OWNER will pay as its next progress payment to contractor an amount sufficient to increase total payments to CONTRACTOR to 100% of the final contract price, Less any retainer provided under subparagraph 5.3 of Agreement, and a retained amount which shall be equal two times the dollar value of any work remaining to be completed, as determined by ENGINEER and agreed to by OWNER; less retained amounts necessary to satisfy any claims, liens or judgments against the CONTRACTOR which have not been suitably discharged; and less any other sums which may be lawfully deducted, the net retained amount being termed the “Final Payment.” If ENGINEER’S certificate of substantial completion contains a list of items to be completed or corrected (GC-14.8), CONTRACTOR’S first application for payment after issuance of notice of Substantial Completion shall also include CONTRACTOR’S schedule for completing or correcting such items”

### **Partial Utilization**

Add the following sentence to the end of subparagraph 14.10.1 of the General Conditions:

“However, the OWNER reserves the right to delay accepting, using, or operating any part of the work until the entire work is completed.”

### **Final Inspection**

Paragraph 14.11 of the General Conditions is hereby deleted in its entirety and the following is substitute in its place:

“SC-14.11 When Contractor considers Work or an agreed upon portion thereof is complete, written certification shall be submitted stating that the work is ready for final inspection, and specifically indicating that the Contractor has:

1. Reviewed Contract Documents
2. Completed Work in accordance with Contract Documents, and all deficiencies Listed with Certificate of Substantial Completion have been corrected.
3. Inspected Work for compliance with Contract Documents

After receipt of such certification and after completion of contractors cleaning of the area and equipment in accordance with sub-part entitled ‘Final Cleaning’ in this section, ENGINEER will make 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 measures as are necessary to complete such Work or remedy such deficiencies.”

### **Final Application for Payment**

SC-14.12 Add the following Language to paragraph 14.12 of the General Conditions:

“ The application shall be made on forms provided by the ENGINEER. By signing the application and certificate for payment, the CONTRACTOR certifies that the total cost of the Work and the amount due the CONTRACTOR for payment is full compensation for all Work done under the terms of the contract in its original form; that payment is full compensation for all work ordered to be done under Change Orders; and that the payment is full compensation for all other work done by the CONTRACTOR for doing and furnishing everything relating to or arising out of the Work, and that the CONTRACTOR waives all rights to claim or receive any further compensation in addition to that provided for the Final Payment except as provided in paragraph 14.15.”

### **Final Payment and Acceptance**

SC-14.13 Delete the phrase “Thirty Days” which begins the last sentence of paragraph 14.13 of the General Conditions and substitute in its place the phrase “Forty-five days.”

Add the following language to paragraph 14.13 of the General Conditions:

The amounts retained to satisfy any claims, liens, or judgments against CONTRACTOR will be released to CONTRACTOR if evidence satisfactory to OWNER is promptly furnished that such claims, liens, or judgments were suitably discharged. Any claims, liens, or judgments referred to in these Contract Documents shall

pertain to the project and must be filed in accordance with the terms of the applicable contract and/or applicable laws.”

SC-14.14 Delete the last two sentences of paragraph 14.4 of the General Conditions and add the following language to the end thereof:

“The amount retained to assure final completion of the work will be released to CONTRACTOR when all items are completed and the Work is acceptable to ENGINEER; such payment will be made by OWNER within forty-five (45) days after the date he receives notification from the ENGINEER that work is acceptable complete. The amounts retained to satisfy any claims, liens, or judgments against CONTRACTOR will be released to CONTRACTOR if evidence satisfactory to OWNER is promptly furnished that such claims, liens, judgments were suitably discharged. Any claims, liens or judgments referred to in these Contract Documents shall pertain to the project and must be filed in accordance with the terms of the applicable contract and/or applicable laws.”

## **ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION**

SC- 15.2.4 Insert the word “applicable” in front of the term “Laws and Regulations” as the same appears in paragraph 15.2.4

SC-15.4.2 Strike the last phrase of the last sentence reading “plus fair and reasonable sums for overhead and profit on such expense.” And replace it with the following: Plus overhead and profit on such expense in the manner described in paragraph 11.4 and 11.5.”

SC-15.5 CONTRACTOR May stop Work or Terminate

Amend paragraph 15.5 of the General Conditions as Follows:

- a. Change the phrase “or OWNER fails for thirty days to pay CONTRACTOR any sum Finally determined to be due,” which begins on the fifth line of GC-15.5, to read: “or OWNER fails for sixty days to pay CONTRACTOR any sum finally determined to be due.”
- b. Change the phrase “ or OWNER has failed for thirty days to pay CONTRACTOR any Sum finally determined to be due.” Which begins on the fifteenth line of GC-15.5, to read; “or OWNER has failed for sixty days to pay CONTRACTOR any sums finally determined to be due.”

## **ARTICLE 16- MEDIATION**

Delete the title of Article 16 and replace with “MEDIATION”

Delete all of Article 16 of the General Conditions and substitute in its place the following:

### **MEDIATION**

SC-16.1 Claims, disputes, or other matters in controversy arising out of or related to the agreement except those waved as provided for in the Contract Documents shall be subject to mediation. The terms of this Article 16 shall survive the owner’s acceptance of the work or termination of the Contract.

SC-16.2 The parties shall endeavor to resolve their claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its

Construction Industry Mediation Procedures in effect on the date of the agreement (but specifically excluding any provision therein, of law or otherwise, adopting or referencing local, federal, or state law or the effect of which would be to permit, or otherwise authorize, enforcement of such mediation decision). A request for mediation shall be made in writing, delivered to the other party to the Agreement, and filed with the person or entity administering the Mediation.

SC-16.3 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the project is located, unless another location is mutually agreed upon.

## **ARTICLE 17- MISCELLANEOUS**

### **17.2 Computation of Times**

SC-17.2.1 Legal holidays shall include those defined as such by the laws of the Nation, The United States or the State of New York.

### **17.4 Cumulative Remedies**

Insert the following language at the beginning of paragraph 17.4:

“Except as limited by sections 17.7 and 17.8 of the Supplementary Conditions,”

Add the following under Article 17:

### **17.6 Equal Opportunity**

SC-17.6.1 CONTRACTOR will not discriminate against any employee or applicant for employment because of race, color, religion, sex, handicap or national origin. CONTRACTOR will take affirmative action to ensure that applicants are employed and that employees are treated during employment, without regard to their race, color, religion, sex, handicap, or national origin. Such action shall include but not be limited to, employment, upgrading, demotion, or transfer, recruitment, or recruitment advertising, layoff or termination, rates of pay or other forms of compensation and selection for training, including apprenticeship. CONTRACTOR agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

SC-17.6.2 CONTRACTOR will state in all solicitations or advertisements for employees placed by or on behalf of the CONTRACTOR that all qualified applicants will receive consideration for employment without regard to race, color, religion, creed, sex, marital status, national origin, ancestry, present or past history of mental disorder, mental retardation, or physical disability, including but not limited to, blindness.

SC-17.6.3 CONTRACTOR will send to each labor union or representative of workers with which it has collective bargaining agreement or other contract or understanding a notice advising the labor union or workers representative of CONTRACTOR'S commitments under this Equal Opportunity clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment,

### **17.8 Limited Liability of OWNER**

SC-17.8 Notwithstanding anything herein to the contrary, the liability of OWNER to CONTRACTOR and/or any other person in connection with the Project and the Contract shall not in the aggregate exceed the then remaining amounts, if any, of monies allocated to the Project under the Bond Documents. Furthermore, in no event shall OWNER'S liability resulting from work performed hereunder exceed CONTRACTOR'S liability

in connection therewith. Notwithstanding the provisions of this paragraph 17.11, nothing herein shall be construed or interpreted to be a waiver of sovereign immunity by OWNER.

#### **17.9 Seneca Nation of Indians Tribal Employment Rights Ordinance.**

SC-17.9 Contractor hereby acknowledges the Seneca Nation of Indians Tribal Employment Rights Ordinance (TERO) attached to the General Conditions as Exhibit GC-B. CONTRACTOR, by its execution of the General Conditions and Supplementary Conditions, represents that it has read and understands fully the requirements of TERO, and CONTRACTOR hereby agrees that it is bound by and will fully comply with TERO and any other amendments or modifications thereto, including but not limited to any actions taken by the Seneca Nation of Indians pursuant to TERO. CONTRACTOR agrees that, if for any reason, the Seneca Nation of Indians determines that CONTRACTOR cannot continue to discharge its duties under the Contract, such determination shall be considered a substantial breach of the Contract Documents by the CONTRACTOR, at which time OWNER shall have the benefit of all rights, remedies and redress against CONTRACTOR that the Seneca Nation of Indians has against OWNER under TERO. CONTRACTOR acknowledges that it is responsible for any fees required to be paid for the project pursuant to TERO unless CONTRACTOR has been notified in writing that such requirement has been formally waived by the Seneca Nation.

#### **17.10 Confidentiality**

SC-17.10.1 The Parties agree that this Agreement and all information and data exchanged by them in accordance with the Contract that is non-public, proprietary and/or confidential in nature, including but not limited to any and all drawings, specifications. Plans and methodology drafted and/or utilized in connection with the project, shall be maintained in strict and absolute confidence, except upon prior written notice and with respect to disclosure (i) pursuant to the sale, disposition or other alienation (directly or indirectly) of a Party's rights and interest in and to the Contract, (ii) pursuant to the sale or other disposition (directly or indirectly) of all or substantially all of a Party, (iii) in conjunction with merger, consolidation, share exchange or other form of statutory reorganization involving a Party, (iv) to lenders, accountants, and other representatives of the disclosing Party with need to know such information, (v) as required to make disclosure in compliance with any law, under compulsion of judicial process, to comply with this Agreement and its objectives, or (vi) to Parties accountants, attorneys, and any government entity (where required), provided that the disclosing Party shall be liable for any disclosure by the receiving person to the extent such disclosure would not be permitted by this Section if made by the disclosing Party.

SC17.10.2 CONTRACTOR agrees not to mention the Project or use the name, logo or any other marks owned by or associated with OWNER or the Seneca Nation of Indians, including without limitation the name of any representative of OWNER or the Seneca Nation of Indians, including without any limitation the name of any representative of OWNER, in any sales promotion work or advertising, or any form of publicity, without the written permission of OWNER in each instance.

#### **17.11 Buy American Act- Supplies and Construction Materials.**

SC-17.11 CONTRACTOR agrees to comply with the requirements of United States 43 CFR 12.700 through 12.730 (Buy American Act- Supplies) and 43 CFR 12.800 through 12.830 (Buy American Act-Construction Materials).

## **17.12 Registration with Central Contractor Registration (CCR) Database.**

The contractor shall register with the CCR database ([www.ccr.gov](http://www.ccr.gov)) and complete other registration requirements as determined by the Director, Office of Management and Budget.

### **SC-17.12 ARBITRATION**

SC-17.12 Any claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement (but specifically excluding any provision therein, of law or otherwise, adopting or referencing local, federal, or state law, or the effect of which would be to permit or otherwise authorize, enforcement of such arbitration award). A demand for arbitration shall be made in writing, delivered to the other party to the Agreement, and filed with the person or entity administering the arbitration. The Party filing a notice of demand for arbitration must assert in the demand all claims the known to that party on which arbitration is permitted to be demanded.

A demand for arbitration shall be made no earlier than concurrently with filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the claim would be barred by the applicable statute of limitations. For statute of limitation purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on claim.

# TRIBAL EMPLOYMENT RIGHTS

## ORDINANCE



**(ENACTED: JUNE 23, 1993 - EFFECTIVE JUNE 23, 1993)**

AMENDED: APRIL 16, 1994  
AMENDED: APRIL 13, 1996  
AMENDED: JULY 11, 1998  
AMENDED: DECEMBER 11, 2004  
AMENDED: NOVEMBER 12, 2005  
AMENDED: AUGUST 12, 2006  
AMENDED: OCTOBER 13, 2007  
AMENDED: SEPTEMBER 20, 2008  
AND  
EFFECTIVE: FEBRUARY 14, 2009  
AMENDED: MAY 12, 2012  
AMENDED: AUGUST 6, 2012



# Seneca Nation of Indians

TRIBAL EMPLOYMENT RIGHTS ORDINANCE

## COMPLIANCE PLAN

PROJECT: \_\_\_\_\_

LOCATION: \_\_\_\_\_

PROJECT START DATE: \_\_\_\_\_

PROJECT END DATE: \_\_\_\_\_

COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

PHONE: \_\_\_\_\_ FAX: \_\_\_\_\_

EMAIL: \_\_\_\_\_

**NOTE:**  
ANY EMPLOYER NOT SUBMITTING AN ACCEPTABLE COMPLIANCE PLAN MAY  
BE DENIED THE RIGHT TO COMMENCE OR CONTINUE DOING BUSINESS WITHIN  
THE EXTERIOR BOUNDARIES OF SENECA NATION LANDS

Whereas this agreement is entered into between the Seneca Nation of Indians (SNI) Tribal Employment Rights Office (TERO) and said Employer with respect to compliance in contracting, subcontracting, and employment, as stated in the Seneca Nation of Indians Tribal Employment Rights Ordinance.

1. SUBCONTRACTORS

The employer agrees that Indian Preference as set out in the Seneca Nation of Indians Tribal Employment Rights Ordinance shall apply in the selection of subcontractors.

2. EMPLOYMENT PRIORITY

- A. An Employer may recruit and hire workers from whatever sources available to him and by whatever process he so chooses, provided that he shall notify TERO of any job vacancies, positions, or any negotiated positions prior to filling those positions. The Employer will give TERO not less than 48hours to locate and refer a qualified Indian for such vacancies and positions, except when circumstances require that the position be filled within a shorter period of time. TERO will use its Skill Bank to assist the Employer in meeting the stipulated hiring goal for this project. TERO will maintain a Skill Bank, listing of available Indians by job classification based on skill level as indicated on their TERO application to be used to fill job vacancies, new positions, or any other negotiated positions under this agreement. TERO will refer the names of those Indians who meet the minimum qualifications only. It will only be the responsibility of the employer to make the final selection.
- B. At the request of the TERO, the Employer shall submit to the TERO, for TERO review and approval, job descriptions or minimum requirements for the position(s) to be filled. TERO may modify the job description and minimum job requirements to ensure that only those requirements necessary for the proper performance of the contract work are listed for the position and that a covered employer or entity has not used qualification criteria for such job requirements to serve as barriers to Indian employment.
- C. Indian preference, as set out in the Seneca Nation of Indians Tribal Employment Rights Ordinance, shall also be applied in reverse order to any layoffs or reductions-in-force so that enrolled Seneca Nation members and other Indians are retained in positions of employment to the extent practicable. To the extent a layoff or reduction in force becomes necessary, the Employer shall submit to TERO a plan for implementing the layoff or reduction in force which shows compliance with this subsection, prior to implementing the layoff or reduction in force.

3. BARRIERS TO EMPLOYMENT

The employer will not use qualifications, criteria or other personnel requirements as barriers to Indians.

4. TRAINING AND SALARY

- A. At the request of the TERO Director or the Director's designee, the Employer may be required to establish or participate in such training programs as the TERO Director determines necessary, in order to increase the pool of qualified Indians within Seneca Nation Lands as quickly as possible.
- B. All Indian employees will be evaluated and paid according to current Employer and Company policies.

5. DISCRIMINATION

There shall be no discrimination in the amount of rates of wages, in fringe benefits, or other employer-related activity.

6. HIRING GOALS

The employer agrees that at least 51% of its employees working within the exterior boundaries of Seneca Nation Lands will be qualified Indians, as established by the Seneca Nation of Indians Tribal Employment Rights Ordinance and negotiated under this Compliance Plan.

7. EMPLOYMENT RIGHTS FEE

Pursuant to Section 11-A of the SNI Tribal Employment Rights Ordinance, every covered employer with a prime construction contract in the sum of \$50,000 or more shall pay a one-time fee of 5% of the total amount of the contract. Such fee shall be paid by the employer prior to commencing work within Seneca Nation Lands. However, where good cause is shown, the Commission may authorize a construction contractor to pay said fee in installments over the course of the contract.

8. INSPECTIONS

The Director of TERO his or her designate shall have the right to inspect all sites where employment is taking place under the provisions of this agreement, within the exterior boundaries of Seneca Nation Lands.

9. RECORDS

The Employer, through its Site Superintendent or other designee, must submit, upon request, to the TERO, an Employment Report, which includes the following data:

- 1. Wage and hour reports
- 2. New hires, terminations, lay offs, promotions (if terminated, disciplinary action taken)
- 3. Promotions
- 4. Payroll records

10. EMPLOYMENT POLICIES AND PROCEDURES

If the employer deems an employee such that he or she is in danger of being suspended or terminated, the employer may contact TERO for assistance in working out the problem. It is further understood that the employer recognizes that its operations are taking place within a unique cultural setting upon Seneca Nation Lands. Accordingly, the employer, in conjunction with the TERO Director, will consider and take into account tribal cultural customs and business needs.

11. PRIME RESPONSIBLE FOR COMPLIANCE OF SUBCONTRACTORS

The Prime Contractor will be held responsible and accountable for assuring that any Subcontractors let under this contract have a signed Compliance Plan, and that the subcontractor shall follow all stipulations under their Compliance Plan.

12. COMPLIANCE WITH OTHER PROGRAMS

The employer acknowledges that they are aware of other Tribal Ordinances that may affect this contract including, but not limited to, Underground Storage Tank Ordinance, Waste Disposal Ordinance, Utilities Ordinance, and Hazardous Chemical Ordinance.

13. DURATION

This agreement shall be for the life of this specific project contract.

**I have received and read the Seneca Nation of Indians Tribal Employment Rights Ordinance. I agree to abide by the stated conditions of the Ordinance and the Compliance Plan.**

EMPLOYER SIGNATURE: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

**TERO FEE**

(THIS FEE PERTAINS ONLY TO PRIME CONTRUCTION CONTRACTS THAT ARE \$50,000.00 OR MORE.)

CONTRACT AMOUNT: \_\_\_\_\_ TERO FEE @ 5%- \_\_\_\_\_

TERO FEE PAYMENT SCHEDULE (IF FEE IS OVER \$10,000):

DATE OF: 1<sup>ST</sup> PAYMENT: \_\_\_\_\_

2<sup>ND</sup> PAYMENT: \_\_\_\_\_

3<sup>RD</sup> PAYMENT: \_\_\_\_\_

4<sup>TH</sup> PAYMENT: \_\_\_\_\_

## **SUB-CONTRACTING**

List identified subcontractors. Note Indian Preference Firms. Documentation must be provided showing that Indian Preference has been addressed for this project.

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## LABOR FORCE REQUEST

**NOTE:** THE INDIAN PREFERENCE EMPLOYMENT OF AT LEAST 51% IS EXPECTED TO BE EMPLOYED, IF THE TRIBAL EMPLOYMENT RIGHTS OFFICE HAS QUALIFIED INDIAN PREFERENCE EMPLOYEES.

<u>OCCUPATION/SPECIFIC JOB SKILLS REQUIRED</u>	<u># WORKERS NEEDED</u>	<u>DATE NEEDED</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

COMMENTS:

\*APPLICATIONS OF QUALIFIED PERSONS WILL BE SENT TO EMPLOYER. IT IS THEIR RESPONSIBILITY TO CONTACT AND SELECT WHO THEY CHOOSE TO HIRE.

# TECHNICAL SPECIFICATIONS

## DIVISION 1 - GENERAL REQUIREMENTS

### SECTION 1A - SUMMARY OF WORK AND REQUIREMENTS

1. **GENERAL:** The technical specifications for this contract are under the direct supervision of the Project Engineer. All questions pertaining to these specifications should be directed in writing to:

Joel Merrill  
Seneca Nation of Indians Health System  
987 RC Hoag Dr.  
Salamanca, NY 14779  
Telephone: (716) 945-5894 x5277  
Email: joel.merrill@senecahealth.org

2. **LOCATION AND DESCRIPTION OF WORK:** The work covered by these specifications will be constructed at the Sullivan Hollow tank site, off Sullivan Hollow Rd, on the Allegany Territory.

The work includes water tank construction and related site work.

3. **SUBMITTALS**

A. Submittals are required:

1. Where called for in these specifications or on the drawings.
2. For any item the Contractor proposes to substitute for a specified item as an "or equal".
3. For any proposed design change or deviation from these specifications or the drawings.
4. For method of disposal and disposal location of any materials to be removed.

B. **Two sets of submittals shall be provided to the Project Engineer at least two weeks before a determination is required. Substitutions or deviations require approval by the Project Engineer.**

C. See General Conditions Article 6.25 and Supplementary Conditions

4. **RECORD DRAWINGS (AS-BUILTS)**

See General Conditions Article 6.19 and Supplementary Conditions

The Contractor shall mark up one set of paper prints to show the as-built information. These as-builts shall be kept current and **available on the job site at all times**. All changes from the contract plans which are made in the work or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. No construction work shall be concealed until the necessary record data has been recorded. The as-builts will be inspected for accuracy and completeness by the Project Manager, Project Engineer, and a responsible representative of the Contractor prior to submission of each partial payment, as evidenced by the issuance of a receipt by the Project Manager indicating the adequacy of the information. Failure to keep the as-constructed marked prints on a current basis shall be sufficient justification to withhold approval of request for payment or suspend pay estimates. The drawings

shall show the following information, but not limited thereto.

- A. The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions to permanent features.
- B. The location and dimensions of any changes from the contract drawings.
- C. Changes in details of design or additional information obtained from working drawings specified to be prepared and/or furnished by the Contractor including but not limited to fabrication, erection, installation plans, and placing details, pipe size, insulation materials, dimensions of equipment foundations, etc.
- D. All changes or modifications which result from the final inspection.
- E. All information as required in the technical provisions.

Review and Approval: One set of the preliminary as-builts marked prints shall be delivered to the owner before final inspection for his review and approval. The review by the owner will be expedited; however, the owner cannot guarantee to review more than one complex mechanical or electrical record drawing sheet per working day. Upon disapproval of the as-builts one set of marked prints will be returned to the Contractor for further work and resubmitted to the owner.

Other: All costs incurred by the Contractor in the preparation and furnishing of as-builts shall be included in the contract price and no separate payment will be made for this work. Approval and acceptance of as-builts must be accomplished before final payment is made to the Contractor.

## **5. WARRANTIES**

See General Conditions Article 6.30 and Supplementary Conditions

Unless otherwise indicated, the Contractor shall warrant all materials provided and work performed under this contract for a period of one year from the date of final acceptance. He shall replace promptly and at his own expense any materials and workmanship which fails during this warranty period.

## **6. PROTECTION OF SITE**

See General Conditions Article 6.20 and Supplementary Conditions

Except as otherwise provided herein, the Contractor shall protect all utilities, fences, structures, walks, trees, shrubbery, lawns, etc. The Contractor shall make every effort to maintain continuity of the services of the community. During the progress of the work he shall remove all debris and unused materials and shall, upon completion of the work, restore the site as nearly as possible to its original condition, including the replacement, at the Contractor's sole expense, any facility or landscaping which has been destroyed or damaged beyond restoration.

## **7. UTILITIES**

Unless otherwise indicated in these specifications, the Contractor shall arrange for and provide any required utilities at his sole cost and expense. This includes but is not limited to water for compaction or testing, power for operating his plant or equipment including testing installed equipment, and

personnel sanitation facilities.

## 8. SAFETY REQUIREMENTS

See General Conditions Article 6.20 and Supplementary Conditions SC-6.20

The Contractor shall comply with all pertinent provisions of the Department of Labor "Safety and Health Regulations for Construction (29 CFR Part 1926 and applicable sections of Part 1910)", with additions or modifications thereto, in effect during construction of this project.

Excavations and adjacent areas must be inspected by a competent person at the start of each work day and as needed throughout the day for evidence of hazardous conditions or developing hazardous conditions. **Prior to the start of construction**, the Contractor shall provide the Project Engineer a list of person(s) who meet OSHA requirements as a "competent person", and who will be on site to conduct the daily inspections when required. A record of these daily inspections shall be kept by the Contractor and be made available to the Project Engineer or his/her representative upon request. It is the Contractor's responsibility to become knowledgeable of the regulation and comply with all requirements contained therein.

The Project Engineer or designated representative shall notify the Contractor of any uncorrected non-compliance. The Contractor shall after receipt of such notice, immediately correct the conditions to which attention has been directed. Such notice, when served to the Contractor or his/her representative at the site, shall be deemed sufficient.

If the Contractor fails or refuses to comply promptly with requirements, the Project Engineer may issue an order to suspend all or any part of the work. However, if a life jeopardizing condition exists, the Project Engineer or designated representative shall have the authority to stop work immediately by oral instruction. When satisfactory corrective action has been taken, an order to resume work will be issued.

The following measures or provisions are to be adhered to at all times during the construction of this project:

- A. All heavy construction machinery to include trenching machines, bulldozers, backhoes, etc., must be equipped with a roll bar meeting the requirements of the above regulation, and;
- B. Safety helmets will be worn by all personnel working at the site, and;
- C. Safety boots or sturdy leather work boots will be worn by all personnel working at the site.
- D. Other personal protective equipment, such as goggles, earplugs, gloves, and respirators shall be worn by employees where conditions dictate their use.
- E. All personnel working at the site shall comply with all of the provisions of the most recent State and Federal confined space entry regulations.

## 9. STANDARD SPECIFICATIONS

When referred to in these specifications, the following and others in attached specifications means the latest edition, publication, standard, or specification of:

AASHTO      American Association of State Highway and Transportation Officials.

ACI	American Concrete Institute.
ANSI	American National Standards Institute.
ASTM	American Society for Testing and Materials.
AWWA	American Waterworks Association.
FDA	Food and Drug Administration.
NEMA	National Electrical Manufacturers Association.
NEC	National Electrical Code.
NSF	National Sanitation Foundation.
OSHA	Occupational Safety and Health Administration.
SSPC	Steel Structures Painting Council.
UL	Underwriters Laboratories, Inc.
UPC	Uniform Plumbing Code.

**10. NOTIFICATION REQUIREMENTS**

It shall be the Contractor's responsibility to notify all utility companies involved whenever a utility line is to be cut, tapped, moved, or in any way disturbed from its original placement. Sufficient notice shall be given to the utility company so that its users can be informed of any disruption of service. Such notice must be given no less than 24 hours in advance.

**11. INTERFERENCE WITH PUBLIC WORKS**

The Contractor shall conduct operations so as to not close or obstruct any portion of any highway, road, street or private driveway; or prevent free access to fire hydrants until permission has been obtained from the proper authorities. Any highway or street maintenance or repair work required by local authorities in connection with necessary operations under this contract shall be performed by the Contractor at his/her expense.

**12. CONSTRUCTION SCHEDULE:** See General Conditions Article 2.6.2 and Supplementary Conditions 2.6.1- 2.6.2.

**13. CLEAN UP**

During construction, the Contractor shall maintain a clean, safe working environment. Upon completion of the work, the site shall be cleared of all debris and ground surface shall be finished to smooth uniform slopes and shall present a neat and workmanlike appearance. Clean-up shall be considered an incidental item and no separate payment shall be made for any clean-up item.

## SECTION 607 – FENCES

### 607-1 DESCRIPTION.

This work shall consist of furnishing and erecting fencing and metal fence gates of the type and size, and at the locations shown on the plans or as directed by the Engineer. Construction of fencing and gates shall be done in accordance with these specifications and the plans, and in reasonable close conformity with the lines and grades shown on the plans or established by the Engineer.

607-1.01 Fence Types. The fence shall be designated as follows: Chain Link Fence

#### TYPE I Fabric Options

Frame Options Coated Steel Fence Fabric Mischmetal Alloy Coating 661 (95% Zinc 5% Aluminum- Mischmetal Alloy) (95% Zinc 5% Aluminum) Galvanized Steel Galvanized Steel Aluminum Combined Coating on Steel Aluminum Coated Steel Aluminum Aluminum Coated Steel

TYPE II Fabric Options Frame Options Coated Steel Fence Fabric Mischmetal Alloy Coating (95% Zinc 5% Aluminum- Mischmetal Alloy) (95% Zinc 5% Aluminum) Galvanized Steel Galvanized Steel Vinyl Coated Steel Combined Coating on Steel Aluminum Plastic on Steel Aluminum Coated Steel Aluminum Aluminum

607-2 MATERIALS. Materials shall conform to the requirements specified in the following

607-2.01 Portland Cement Concrete for Bases. Portland Cement concrete used for bases shall be Class A or C

A. Gate Frames. Frames shall be constructed of tubular members welded at all corners or assembled with corner fittings. Where corner fittings are used gates shall have 3/8 inch nominal diameter truss rods to prevent sag or twist. Gate leaves shall have vertical intermediate bracing so that no vertical members are more than 8 feet apart. Gate leaves over 10 feet long shall have a horizontal brace or a 3/8 inch nominal diameter diagonal truss rod.

B. Gate Fabric. Gate fabric shall conform to the requirements of the fabric used in the fence construction.

C. Gate Hinges. Hinges shall be weldable steel, cast steel or malleable iron 180° offset industrial type. The hinges shall not twist or turn under the action of the gate. The gates shall be capable of being opened and closed easily by one person. Hinges shall be galvanized.

D. Gate Latches. Latches, stops and keepers shall be provided for all gates. Latches shall have a plunger bar arranged to engage the center stop, except that single left gate openings with an opening of less than 10 feet may use a forked latch. Latches shall be arranged for locking and the Contractor shall provide a lock with triplicate keys for each gate. Center stops shall consist of a device arranged to be set in concrete and to engage a plunger-bar of the latch of double leaf gates. No stop is required for single leaf gates. Keepers shall consist of a mechanical device for

securing the free end of the gate when in the full open position.

### 607-3 CONSTRUCTION DETAILS

#### 607-3.01 General.

The Contractor shall perform such clearing and grubbing as may be necessary to construct the fence to the required grade and alignment.

At locations where breaks in a run of fencing are required, or at intersections with existing fences, appropriate adjustment in post spacing shall be made to conform to the requirements for the type of closure indicated.

When the plans require that the posts, braces, or anchors be embedded in concrete, the Contractor shall install temporary guys or braces as may be required to hold the posts in proper position until such time as the concrete has set sufficiently to hold the posts. Unless otherwise permitted, no materials shall be installed on posts or strain placed on guys and bracing set in concrete until seven days have elapsed from the time of placing the concrete.

All posts shall be set vertically and to the required grade and alignment.

Cutting of the tops of the posts will be allowed only with the approval of the Engineer and under the Engineer's specified conditions.

Wire or fencing of the size and type required shall be firmly attached to the posts and braces in the manner indicated.

All wire shall be stretched taut and be installed to the required elevations.

Fence shall generally follow the contour of the ground, with the bottom of fence fabric no less than 1 inch nor more than 6 inch from the ground surface. Grading shall be performed where necessary to provide a neat appearance.

Line posts shall be spaced equidistant in the fence line at the spacing shown on the plans or as directed by the Engineer. End, corner, and intermediate posts shall be placed at the locations indicated on the plans, standard sheets or as directed by the Engineer, and shall be braced as shown on the plans or standard sheets.

All end, corner, and intermediate posts shall be set plumb in concrete bases of the depth and diameter shown on the plans or standard sheets. The Contractor shall have the option of setting the line posts in concrete bases or using methods of driving and anchoring specified by the fence manufacturer and approved by the Engineer. The concrete bases shall be rough cast in the ground around the posts. The top surfaces shall be domed to shed water and provide a neat workmanlike appearance when completed. Extensions of up 45 minutes for the allowed time for pouring the concrete will be permitted.

607-3.02 Chain-Link Fencing with Top Rail. Posts shall be set so they are equidistant with a maximum of 10 foot centers. All top rails shall pass through the base of the post caps and shall form a continuous brace from end to end of each stretch of fence. Top rail lengths shall be joined with sleeve couplings with expansion sleeves provided at 100 foot intervals. Top rails shall be securely fastened to end posts by means of approved rail end connectors. Horizontal braces shall be provided at all intermediate posts, midway between the top rail and ground as shown on the plans or standard sheets. Diagonal truss rods shall be installed with the horizontal

braces as indicated on the plans or standard sheets. Fence fabric shall be installed approximately 2 inch above the ground level and securely fastened along the bottom, and to all braces, top rails, line and pull posts, at the intervals indicated on the standard sheets by approved methods. The fabric shall be secured to all end, corner and gate posts with stretcher bars fastened to the posts, with stretcher bands spaced at a maximum of 14 inches and in a manner permitting adjustment of the fabric tension. If the Contractor elects the option of using one piece roll-formed sections, the fence fabric shall be integrally woven into the fabric loops on the end, corner, pull and gate posts. The fabric shall be attached to the top braces and line posts as shown on the standard sheets.

607-3.03 Chain-Link Fencing with Top Tension Wire. The construction details specified in §607- 3.02 Chain Link Fencing with Top Rail shall apply with the following modifications:

A. Top tension wire shall be installed as shown on the plans, standard sheets, or as directed by the Engineer.

B. All posts shall be spaced equidistant in the fence line on a maximum of 8 foot centers.

C. Additional pull posts shall be placed at locations indicated on the plans or standard sheets. Brace assemblies shall be installed at each intermediate post as indicated on the plans or standard sheets.

General. All line posts of the type and size shown on the plans or standard sheets shall be placed equidistant in the fence line. Metal line posts shall be placed on a maximum of 10 foot centers. Intermediate posts and post assemblies, end posts, corner posts, approach spans, and bracing shall be as shown on the plans or standard sheets. The woven wire fencing shall be fastened to all steel line posts with at least 5 galvanized wire fasteners or clamps and to all steel end, intermediate and corner posts with aluminum wire not less than 5/32 inch diameter. The top and bottom wires and every other in-between wires shall be stapled, alternating the stapling of the in-between wires on successive posts.

607-3.07 Fence Gates. The Contractor shall construct metal fence gates of the type and size as indicated on the plans and in the location shown or ordered by the Engineer.

#### 607-4 METHOD OF MEASUREMENT

607-4.01 General. The quantity to be paid for all fencing exclusive of fence gates and fencing of the types listed in subsequent subsections, will be a lump sum for all fencing and gates installed.

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Measurement and payment criteria applicable to the Work performed under a unit price or lump sum payment method.
- B. Defect assessment and non-payment for rejected work.

1.02 AUTHORITY

- A. Measurement methods delineated in the individual Specification Sections complement the criteria of this Section. In the event of conflict, the ENGINEER will make a determination of which measurement method(s) shall govern.
- B. The CONTRACTOR shall take all measurements and compute quantities. The ENGINEER will verify measurements and quantities.
- C. The CONTRACTOR shall assist the ENGINEER by providing necessary equipment, workers, and/or survey personnel as required.
- D. To best facilitate agreement on quantities eligible for payment, the CONTRACTOR and the Resident Inspector shall agree on actual quantities of Work completed under each Pay Item at the end of each Work day, and shall attest to their approval by each signing the days quantity sheet. These daily quantity sheets shall then be tabulated to facilitate the Partial Payment estimates discussed elsewhere in the Contract Documents.

1.03 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding, contract purposes, and comparison of the bids only; they are not intended to be absolute. Actual quantities and measurements supplied or placed in the Work, and verified by the ENGINEER, determine actual payment.
- B. If the actual Work requires more or fewer quantities than those quantities indicated, the CONTRACTOR shall provide the required quantities at the unit sum/prices contracted, unless otherwise permitted by execution of a Change Order.
- C. Variations in quantity are to be expected in the final quantities, and no claim for extra payment will be allowed due to changes in quantities from those herein, unless otherwise permitted by execution of a Change Order.
- D. The OWNER does not expressly or by implication agree that the nature of the materials encountered below the surface of the ground, or the actual quantities of materials required will correspond therewith, and reserves the right to increase or decrease any quantity or to eliminate any quantity, as the OWNER may deem necessary.
- E. Change Orders shall be executed as detailed in Article 10 of the General Conditions.
- F. Issuance of a Field Order of Work Change Directive shall not constitute a change of Contract Price or the Contract Times, and shall be executed as further detailed in the General Conditions.
- G. The OWNER/ENGINEER shall reserve the right to change the quantity used of any item, and/or eliminate any item, as the OWNER/ENGINEER may deem necessary. Quantities of individual items may be altered or eliminated based on the Bid Prices accepted, in an attempt to reduce project costs, or in an attempt to maximize the amount and type of work performed, for the accepted or revised Contract Amount.

#### 1.04 MEASUREMENT OF QUANTITIES

- A. Measurement Devices:
  - 1. Weigh Scales: Inspected, tested, and certified by the State of New York Bureau of Weights and Measures with the last eighteen (18) months.
  - 2. Platform Scales: Of sufficient size and capacity to accommodate the conveying vehicle.
  - 3. Metering Devices: Inspected, tested, and certified by the State of New York Bureau of Weights and Measures within the last eighteen (18) months.
- B. 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.
- C. Measurement by Volume: Measured by cubic dimensions using mean length, width, and height or thickness.
- D. Measurement by Area: Measured by square dimension using mean length and width or radius.
- E. Linear Measurement: Measured by linear dimension, at the item centerline or mean chord.
- F. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as a completed item or unit of Work.

#### 1.05 PAYMENT

- A. Payment Includes: Full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application, or installation of an item of the Work; overhead, profit, and benefits.
- B. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, unless paid for under a separate Bid Item, to include, but not be limited to, plant services, environmental controls, field offices of the CONTRACTOR, survey and layout, public safety controls (fencing, road plates, barrier, ribbon, etc.), job signs, test/exploration holes, sanitary requirements, testing (of all kinds), safety devices, dewatering, temporary restoration (until permanent restoration has been acceptably completed), snow removal (when required), work and costs associated with locating existing utilities, work and equipment associated with creation of record drawings, water supplies, power, removal of waste, watchmen, meetings, public notifications, bonds, insurance, permits and all other requirements of the General Conditions, Supplementary Conditions, and the general requirements of these Specifications. Compensation for all such services and materials shall be included in the prices stipulated for the lump sum and unit price items listed herein.
- C. No direct or separate payment will be made for the repair or replacement of existing facilities (i.e. utilities, service laterals (of all types), storm drains, drain pipes, mailboxes, signs, fences, etc.) damaged as a result of the CONTRACTOR'S activities, regardless if their locations were indicated on the Contract Drawings or not. The cost of this work shall be the sole responsibility of the CONTRACTOR. No additional compensation will be provided to the CONTRACTOR for any such work.
- D. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the ENGINEER, multiplied by the unit price for the Work which is incorporated in or made necessary by the Work.
- E. The CONTRACTOR shall take note that no additional compensation will be provided for any and all costs associated with obtainment of water to be used for flushing, testing, disinfection of water mains, dust control, cleaning of roadways and etc., or for water required for any other reasons for completion of the work, as indicated by the Contract Documents, or as directed by the ENGINEER. The CONTRACTOR will be required to make all necessary and required arrangements to obtain water, and will be required to meter and pay for said water, at the current rates charged, if required by the water supplier.

- F. Work which was Bid and to be paid for on a lump sum basis, shall be measure - based on the Schedule of Values submitted by the CONTRACTOR prior to the start of Work, and the percent complete as approved by the ENGINEER. The CONTRACTOR shall note that even though this Work was Bid on a lump sum basis, the CONTRACTOR is not automatically due full compensation for the Work upon issuance of Final Payment. Payment will be made based on the Schedule of Values provide by the CONTRACTOR, and the percent completed by the CONTRACTOR, as approved by the ENGINEER.
- G. No direct payment will be made for Work required due to the CONTRACTOR'S work performed outside the payment limits, as indicated in the Contract Documents, or as further directed by the ENGINEER. This shall include work performed which is not in conformance with the alignment and grades shown on the Contract Drawings, unless otherwise directed by the ENGINEER. As such, the CONTRACTOR shall be solely responsible to have all proposed alignment and grade adjustments approved by the ENGINEER prior to performing the Work.
- H. No direct payment will be made for costs associated with the storage of materials and equipment, to include, but not be limited to, construction and restoration of staging areas, the CONTRACTOR'S office, easements, land agreements, permits, and all other work performed by the CONTRACTOR in association with the storage of materials and equipment.

#### 1.06 DEFECT ASSESSMENT

- A. The CONTRACTOR shall Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the ENGINEER, it is not practical to remove and replace the Work, the ENGINEER will direct one of the following remedies:
  - 1. The defective Work may remain, but the unit price will be a new unit price at the discretion of the OWNER and the ENGINEER.
  - 2. The defective Work will be partially repaired to the instructions of the ENGINEER, and the unit price will be adjusted to a new unit price at the discretion of the OWNER and the ENGINEER.
- C. The individual Specification Sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The authority of the ENGINEER to assess the defect and identify payment adjustment is final.

#### 1.07 NON-PAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made 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 the transporting vehicle.
  - 4. Products placed beyond the lines and levels of the required Work.
  - 5. Products remaining on hand after completion of the Work.
  - 6. Loading, hauling, and disposing of rejected Products.

#### 1.08 SCHEDULE OF PAY ITEMS

##### BID ITEM 1 - Construction of Water Treatment Facility and Fire Suppression Piping at Sullivan Hollow

- 1. Payment for Item 1 - Complete, shall be made on a lump sum basis, and shall constitute payment in full for all labor, materials, tools, equipment, and coordination between contractors, necessary and required to complete all general construction required for the Sullivan Hollow water treatment plan, as indicated by the Contract Documents, as directed by the ENGINEER, to include all work

required to provide, tested and ready for use, the intended water treatment facility, as further described below.

2. The various sections of the Technical Specifications detail the proposed criteria by which the Work to be included and paid for under this item is to be completed, to include reference standards, material standards, design criteria, erection standards, testing standards, and manufacturer.
3. Work to be paid for and to be included in the lump sum price bid for Item 1 shall generally include but not be limited to the following:
  - a. All necessary and required site work, to include but not be limited to all clearing, grubbing, excavation, backfilling (**with all types of material**), bedding material, all **temporary and permanent restoration (of all kinds)**, permanent fencing and gates, all proposed trees and landscaping items, environmental controls, dewatering, all work associated with providing for a safe work-site and protection from the general public (to include all necessary and required fencing, watchman, barriers, ribbon, lighting, trench plates, and etc.), cleaning, and demolition and/or abandonment of existing facilities.
  - b. The furnishing and construction of one 400 SF concrete masonry unit building to generally include but not be limited to, all demolition, removal of equipment, cutting, concrete block, footings, foundation, concrete slab, lintels, rebar, structural fill (select, stone, etc.), floor drain and outlet piping, waterproofing, expansion material, grout, vapor barrier, insulation, caulking, wood trusses, wood framing, sheeting, building wrap, shingles, ice and water shield, vinyl siding, aluminum soffit and fascia, RFP paneling and trim, metal flashing and paneling, bond beam, vents, doors, door hardware, painting and sealing, drain piping, locks and keys, temporary and permanent lawn and asphalt driveway restoration.
  - c. The furnishing and installation of all necessary and required equipment and components, to generally include but not be limited to, well pump controller, tank level pressure transducer, flow-paced sodium hypochlorite system - complete (to include flow meter, controller, and injection pump), spill containment, chemical day tank, transfer pump, tubing, injection quills, vent piping to exterior, utility sink, shelving, signage, nameplates, and work tables.
  - d. Furnishing, installation and start-up of all heating and ventilation equipment including the propane unit heater as shown on the Contract Drawings and as further specified in the Contract Documents and/or directed by the Engineer.
  - e. The furnishing and installation of all necessary and required equipment and components, to generally include but not be limited to, booster pumps, booster control panels, pressure transducers, hydro-pneumatic tank, and valves as specified in the contract documents.
  - f. The furnishing and installation of all necessary and required equipment and components, to generally include but not be limited to, water filters, filter media, filter control heads, motorized alternating valves, and piping, fittings, and appurtenances as specified in the contract documents.
  - g. The furnishing and installation of all necessary and required equipment and components, to generally include but not be limited to, backwash disposal system, 1,500-gallon concrete septic tank, stone disposal trench, and all piping and appurtenances as specified in the contract documents.
  - h. The furnishing and installation of all necessary and required interior and exterior piping, to include but not limited to, trenching, excavation, disposal of unusable material (off-site), associated valves, fittings, and appurtenances, interconnections, pump #1 and pump #2

connections, concrete pedestal for booster pumps, coordination with the pump installer, hydrants, bedding material, backfill (of all types), piping (all types), tracer wire, fittings, valves, mechanical joint restraints, thrust blocking, connection to existing services, connection to pumps, capping, dewatering, and abandonment of existing piping and valves, master meters, check valves, butterfly valves, gate valves, adapters, pipe supports, raw water and finished water testing services/taps, faucets, hose bibs, painting and finishing, and all testing and disinfection..

- i. The furnishing and installation of all necessary and required electrical service connections, components, and equipment, to include but not be limited to, all necessary and required coordination and scheduling with the power provider, all conduit, wire (of all types - primary cable, secondary cable, service wire, control wire, etc.), equipment connections (booster pump, heater, meter, etc.), stand-by generator relocation and connection, poles, pull boxes, mule tape, marking tape, bedding material, mounting pedestal, grounding, transfer switch, disconnect, meter(s), electric panel(s), controls, motor disconnecting means switches, control panel(s), lighting, receptacles, switches, supports, electrical testing, inspections and certifications, other components depicted on the Contract Drawings or described in the Specifications, and all else necessary and required to provide a complete and functional system. It shall be noted that these Contract Documents are not intended to cover every detail or variation for the installation, or provide for every possible installation contingency. It is expected that the Work will be supervised and performed by qualified persons familiar with electrical construction practices, electrical equipment, safety, and all governing codes and regulations.
  - j. The relocation of all necessary and required liquified petroleum (LP) gas tank and piping, to include but not be limited to, all components and equipment, furnishing and installation of all necessary and required piping, valves, meters, adaptors, trenching, bedding, marking tape, tracer wire, backfilling (with all types of materials), coordination with the LP gas supplier, and all else necessary and required to provide a complete and functional system.
4. The CONTRACTOR shall be solely responsible to verify the existing conditions associated with performing this work, prior to ordering materials required for this work. No additional compensation will be provided for materials required, not necessarily depicted by the Contract Drawings, or inaccurately depicted by the Contract Drawings, unless otherwise approved by the ENGINEER. The Contract Drawings were assembled using the best available information provided to the ENGINEER at the time in which the Contract Drawings were assembled, but in no way does the ENGINEER expressly or by implication claim that the existing conditions depicted on the Contract Drawings to be absolutely accurate, and as such, highly recommends that the CONTRACTOR perform an exploratory excavation and investigation to verify field conditions. The CONTRACTOR shall notify the ENGINEER immediately of any discrepancies. The Cost of this work shall be included in the lump sum price bid for this Item.
  5. Measurement: The quantity to be paid for under this Item will be made on a lump sum basis in proportion to the amount of Work completed in accordance with the CONTRACTORS approved Schedule of Values.
  6. Payment: The lump sum price bid for this Item shall be full compensation, as shown and specified.

END OF SECTION

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## SECTION 01290

### SCHEDULE OF VALUES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. The Schedule of Values is an itemized list that establishes the value or cost of each part of the Work. It shall be used as the basis for preparing progress payments and may be used as a basis for negotiations concerning additional work or credits, which may arise during the construction. Quantities and unit prices may be included in the schedule when approved by or required by the ENGINEER.

##### 1.02 PREPARATION

- A. Schedule shall show breakdown of labor, materials equipment and other costs used in preparation of the Bid.
- B. Costs shall be in sufficient detail to indicate separate amounts for each Section of the Specifications.
- C. CONTRACTOR may include an item for bond, insurance, temporary facilities and job mobilization on lump sum project only. This item will be included for payment at a rate of 25 percent per month for the first four months.
- D. Schedule of Values shall be prepared on 8 1/2-inch by 11-inch white paper.
- E. Use Table of Contents of the Specifications as basis for Schedule format and identify each item with number and title in the Table of Contents. List sub-items of major products or systems as appropriate or when requested by ENGINEER.
- F. When requested by ENGINEER, support values with data that will substantiate their correctness.
- G. The sum of the individual values shown on the Schedule of Values must equal the total Contract Price.
- H. Each item shall include a directly proportional amount of the CONTRACTOR'S overhead and profit.
- I. Schedule shall show the purchase and delivery costs for materials and equipment that the CONTRACTOR anticipates he shall request payment for prior to their installation.

- J. Included in the detailed breakdown shall be a line item for “record documents”. This amount is for preparing and supplying required information and documentation as described in Section 01720, Survey Data.

1.03 SUBMITTAL

- A. Submit two copies of Schedule to ENGINEER for approval at least 20 days prior to submitting first application for a progress payment but no later than 10 days after date of execution of agreement. After review by ENGINEER, revise and resubmit Schedule as required until it is approved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01731

### CONNECTIONS TO EXISTING FACILITIES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Perform all construction necessary to complete connections and tie-ins to existing facilities.
- B. Keep existing facilities in operation unless otherwise specifically permitted in these Specifications or approved by OWNER.
- C. CONTRACTOR shall perform all construction activities so as to avoid interference with operations of the facility and the work of others, and the safety and quality of the finished water.
- D. Related work specified elsewhere:
  - 1. Section 01311, Coordination with OWNER'S Operations.
  - 2. Divisions 2-15, Technical Specifications.

##### 1.02 GENERAL INFORMATION

- A. Construction of interconnections is subject to CONTRACTOR'S submittal of materials, detailed procedures, schedules, etc. required by the contract. The following is for information only and the CONTRACTOR is responsible for all interconnections and abandonments.
- B. The CONTRACTOR shall not operate existing valves. Once a new watermain is placed into service, CONTRACTOR shall not operate those valves.
- C. The OWNER only shall operate existing valves. The CONTRACTOR is advised that watertight conditions may not exist when existing valves are closed. The CONTRACTOR shall consider this in his bid.
- D. The CONTRACTOR shall perform test pits at existing pipes, valves, etc. as shown on the drawings or directed. Watermain installation and the pipe laying schedule should reflect the field information obtained by the test pits. The stationing of tees, fittings and valves should be coordinated with the test pit information in order to facilitate construction of the new watermains and construction of the interconnections.
- E. The CONTRACTOR shall submit to the ENGINEER his proposed interconnection details, procedures and schedules.

- F. The CONTRACTOR shall notify all affected customers of any shut-down at least 48 hours in advance.
- G. The CONTRACTOR shall notify appropriate fire stations 48 hours in advance prior to taking any fire hydrants out of service. Any hydrant not in service shall be bagged in burlap.
- H. Any shut-down shall be limited to 4 consecutive hours.
- I. The CONTRACTOR shall have all equipment, manpower, and materials required for the construction on site and ready for use and/or prior to commencing any shut-down or removing any existing facilities.
- J. The CONTRACTOR shall schedule and coordinate his work with others in accordance with the specifications and shall coordinate all proposed shut-downs with the ENGINEER and OWNER. The work shall be scheduled through the ENGINEER so that the OWNER has a minimum of three (3) working days advance notice.
- K. Only one interconnection will be allowed until the proposed watermain and end of line valves (if applicable) have been installed, tested and disinfected and the ENGINEER authorizes the interconnections.
- L. Caps (or plugs) on iron pipe shall be mechanically restrained watertight caps (or plugs) compatible with the pipe being capped and suitable to resist thrusts due to operating pressures.
- M. Temporary caps shall be watertight and shall remain in place until the actual interconnections are made.
- N. In unpaved areas, all interconnection joints shall remain exposed and tested under operating pressure for a 24-hour period.
- O. If no leaks occur, the exposed interconnection piping can, upon ENGINEER'S authorization, be backfilled.
- P. The CONTRACTOR shall dewater trenches, existing mains, etc. as required to perform the interconnections.
- Q. The CONTRACTOR shall submit his detailed procedures for his interconnection sequence to the ENGINEER.
- R. If the CONTRACTOR wishes to propose construction of several interconnections at one time, he shall submit a written, detailed proposal to the ENGINEER.

- S. No work shall begin on the interconnections until the ENGINEER authorizes the work.
- T. Firms performing taps on existing waterlines shall be acceptable to the OWNER.
- U. All joints at interconnections shall be mechanically restrained.
- V. New hydrants shall remain bagged in burlap (except for flushing and/or testing) until placed into service.
- W. The interconnections and abandonment items include all costs to comply with permits, regulatory agencies, etc., not included under other bid items.
- X. Removals shall be made with caution to prevent damage to hydrants, valves, etc., being removed.
- Y. At all valves being abandoned: locate the valve, close the valve, remove the valve box, backfill and restore as required.
- Z. CONTRACTOR will provide a temporary bypass for water service for all businesses, schools, and other establishments as defined by ENGINEER. No disruption in water service for these establishments will be permitted at any time during construction.

### 1.03 SCHEMATIC DRAWINGS

- A. The schematic drawings included on the plans are not to scale and only indicate the general arrangement of the interconnections and abandonments.
- B. In general, heavy lines indicate proposed improvements, pipe, fittings, etc. and light lines indicate existing facilities.
- C. The schematic drawings do not show other features (such as other underground utilities, etc.) which could affect the work.
- D. The CONTRACTOR shall, at his expense, verify all field conditions.
- E. Restrained mechanical joint solid sleeves or restrained flexible sleeve type couplings will be required to connect the proposed pipe to existing pipe, where applicable. PART 2 - PRODUCTS (NOT USED)

### PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01311

### COORDINATION WITH OWNER'S OPERATIONS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. CONTRACTOR shall carry out all operations to avoid interference with the operations of the existing facilities.
- B. The CONTRACTOR shall not have exclusive possession of the sites of the work to be done under this contract.
- C. In the performance of the work, the CONTRACTOR shall schedule and cooperate fully with the OWNER and other Contractors, affording them facilities for the performance of their work even though it interferes with his own.
- D. Related Work Specified Elsewhere:
  - 1. Section 01731, Connections to Existing Facilities.
  - 2. Divisions 2-15, Technical Specifications.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01312

### PRECONSTRUCTION CONFERENCE

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Date, Time, and Location: Conference will be held after execution of the Agreement and before construction is started at the site. ENGINEER will fix the date, time and location of the meeting in accordance with the General Conditions.
- B. ENGINEER shall prepare agenda, preside at meeting, and prepare and distribute a transcript of proceedings to all parties.
- C. CONTRACTOR(S) shall provide data required, contribute appropriate items for discussion, and be prepared to discuss all items on agenda.
- D. CONTRACTOR shall prepare and distribute a preliminary construction schedule.

##### 1.02 REQUIRED ATTENDANCE

- A. CONTRACTOR(S) and major Subcontractors.
- B. OWNER'S representative.
- C. ENGINEER.
- D. Representatives of governmental agencies having any degree of control or responsibility, if available.

##### 1.03 AGENDA

- A. Agenda will include, but will not necessarily be limited to, the following:
  - 1. Designation of responsible personnel.
  - 2. Subcontractors.
  - 3. Coordination with other contractors.
  - 4. Construction schedule.
  - 5. Review preliminary construction schedule.
  - 6. Processing of Shop Drawings.
  - 7. Schedule of Shop Drawing submittals.
  - 8. Processing of Field Orders and Change Orders.
  - 9. Requirements for copies of Contract Documents.
  - 10. Insurance in force.
  - 11. Schedule of Values.
  - 12. Processing of progress payments.

13. Cash flow.
14. Use of premises.
15. CONTRACTOR(S) responsibility for safety and first aid procedures.
16. Security.
17. Housekeeping.
18. Field Offices.
19. Record Drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01450

### TESTING LABORATORY SERVICES FURNISHED BY CONTRACTOR

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. CONTRACTOR shall employ and pay for an independent testing laboratory to perform the specified services. Laboratory selected shall be subject to approval by the ENGINEER.
- B. Inspection, sampling and testing shall be as specified in the Technical Sections.

##### 1.02 QUALIFICATIONS OF LABORATORY

- A. Where applicable, meet “Recommended Requirements for Independent Laboratory Qualification”, latest edition, published by American Council of Independent Laboratories and the basic requirements of ASTM E329, Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
- B. The laboratory shall be certified by New York State for testing potable water. A NYS ELAP number shall be referenced on all test results.
- C. Submit copies of ELAP certificates for all potable water testing.
- D. Submit copy of report of inspection of facilities made by Materials Reference Laboratory of National Bureau of Standards during most recent tour of inspection; with memorandum of remedies of any deficiencies reported by inspection.
- E. Testing Equipment:
  - 1. Calibrated at maximum 12 month intervals by devices of accuracy traceable to either National Bureau of Standards or accepted values of natural physical constants.
  - 2. Submit copy of certificate of calibration, made by accredited calibration agency.

##### 1.03 LABORATORY DUTIES

- A. Cooperate with ENGINEER and provide qualified personnel promptly on notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction; comply with applicable standards; ascertain compliance with requirements of Contract Documents.

- C. Promptly notify ENGINEER and CONTRACTOR of irregularities or deficiencies of Work, which are observed during performance of services.
- D. Promptly submit 5 copies of reports of inspections and tests to ENGINEER including:
  - 1. Date issued.
  - 2. Project title and number.
  - 3. Testing laboratory name and address.
  - 4. Name and signature of inspector.
  - 5. Date of inspection or sampling.
  - 6. Record of temperature and weather.
  - 7. Date of test.
  - 8. Identification of product and Specification Section.
  - 9. Location in Project.
  - 10. Type of inspection or test.
  - 11. Results of tests and observations regarding compliance with Contract Documents.
- E. Perform additional tests and services as required to assure compliance with the Contract Documents.

#### 1.04 CONTRACTOR'S COORDINATION WITH LABORATORY

- A. Cooperate with laboratory personnel, provide access to Work and to manufacturer's operations.
- B. Provide to laboratory, representative samples of materials to be tested, in required quantities.
- C. Furnish labor and facilities:
  - 1. To provide access to Work to be tested.
  - 2. To obtain and handle samples at the site.
  - 3. To facilitate inspections and tests.
  - 4. For laboratory's exclusive use for storage and curing of test samples.
  - 5. Forms for preparing concrete test beams and cylinders.
- D. Notify laboratory and ENGINEER sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.

#### 1.05 PRODUCT TEST REPORTS

- A. Furnish copies of product test reports where required by the Specifications or requested by ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 01550

### MAINTENANCE AND PROTECTION OF TRAFFIC

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work Specified  
The work specified shall include all labor, material, equipment, services and incidentals necessary to maintain and protect vehicular and pedestrian traffic through all construction areas.
- B. Related Work Specified Elsewhere
  - 1. Division 2-15, Technical Specifications,
  - 2. Section 15051 - Buried Piping Installation

##### 1.02 QUALITY ASSURANCE

- A. Reference Standards  
New York State Department of Transportation Standard Specifications, latest revision.

#### PART 2 - PRODUCTS (NOT USED)

#### PART 3 - EXECUTION

##### 3.01 GENERAL

- A. This work shall consist of maintaining traffic and protecting the public from damage to person and property within the limits of and for the duration of the Contract.
- B. All existing site roads, streets, sidewalks, and traffic ways shall be kept open for the passage of traffic and pedestrians during the construction period unless otherwise approved by the OWNER, ENGINEER or authority having jurisdiction over same.
- C. When required to cross, obstruct or temporarily close a existing site road, street, sidewalk or trafficway, CONTRACTOR shall provide and maintain suitable detours or other approved temporary expedient for the accommodation of traffic. Closings shall be for the shortest time practical, and passage shall be restored immediately after completion of backfill and temporary paving or bridging.

- D. CONTRACTOR shall give 48 hours advance notice to the fire and police departments of his proposed operations including temporary shutdowns.
- E. CONTRACTOR shall provide signs, signals, barricades, flares, lights and all other equipment, service and personnel required to regulate and protect all traffic, and warn of hazards. All such work shall conform to requirements of the OWNER or authority having jurisdiction. Remove temporary equipment and facilities when no longer required, restore grounds to original, or to specified conditions.
- F. Traffic shall be maintained over a reasonably smooth traveled way which shall be so marked by signs, delineators, guiding devices and other methods, that a person who has no knowledge of conditions may safely, and with a minimum of discomfort and inconvenience, ride, drive or walk, day or night, over all or any portion of the street under construction where traffic is to be maintained. All work shall conform to the requirements of the current New York State Manual of Uniform Traffic Control Devices.
- G. CONTRACTOR shall control dust and keep the traveled way free from materials spilled from hauling equipment.
- H. CONTRACTOR shall provide the necessary traffic control equipment and flagmen for adequate traffic control on the traveled way. Flaggers shall be used where opposing traffic is restricted to one (1) lane or where other conditions require, or as required by permit conditions.
- I. CONTRACTOR shall provide ingress and egress to and from intersecting streets, homes, businesses and commercial establishments.
- J. CONTRACTOR shall provide adequate protection for pedestrian traffic during all phases of construction.
- K. CONTRACTOR shall maintain existing bus stops, if any, so passengers are reasonably accommodated.
- L. CONTRACTOR shall make the necessary repairs to existing pavement as required to provide a reasonable smooth traveled way where vehicle operation is maintained.
- M. The CONTRACTOR'S responsibility to the public is to protect the public from damage to person and property, which may result directly or indirectly from any construction operation.
- N. The CONTRACTOR shall provide temporary markings in accordance with provisions of the New York State Manual of Uniform Traffic Control Devices, as

required by the agency having jurisdiction, as shown in the plans and specifications and/or as ordered by the ENGINEER

- O. The CONTRACTOR shall schedule work to keep to a minimum and consistent with the physical requirements of the contract, the amount of existing pavement and/or facilities that are destroyed or substantially torn up at any one time.
- P. The CONTRACTOR shall at all times conduct his operations in a manner to insure the convenience of the motorist, the pedestrians and the abutting property owners and their safety as well as the safety of his own employees.
- Q. The CONTRACTOR shall furnish, install, move, remove and maintain all signs and barricades and lighting for construction barricades as shown on the plans or as ordered by the ENGINEER, and in accordance with the NYS Manual of Uniform Traffic Control Devices.
- R. The CONTRACTOR shall provide and maintain delineation and guiding devices which shall include: delineators, barrels, flashers, railing, temporary curb of any kind, pavement markings, and other similar materials or methods acceptable to the ENGINEER
- S. The CONTRACTOR shall construct, move or remove, as directed, temporary structures, approaches, detours, pavements and necessary appurtenances.
- T. The CONTRACTOR will be responsible to prepare a maintenance and protection of traffic plan and submit the plan to the ENGINEER for information and the Erie County Highway Department and/or NYS DOT (as required) for approval. The maintenance and protection of traffic plan shall be prepared by an engineer licensed to practice in the State of New York.

### 3.02 PARKING CONTROL

- A. Control all CONTRACTOR related vehicular parking within the limits of the Work to preclude interference with public traffic or parking, access by emergency vehicles, OWNER'S operations, or construction operations. Provide temporary parking facilities as may be required because of construction or operations.
- B. Monitor parking of all construction and private vehicles:
  - 1. Maintain free vehicular access to and through parking areas.
  - 2. Prohibit parking on or adjacent to access roads, or in non-designated areas.
  - 3. Parking will not be allowed in areas which limit sight distance of passing motorists.
  - 4. CONTRACTOR is responsible for his vehicles while on-site.

### 3.03 HAUL ROUTES

- A. Consult with governing authorities and establish thoroughfares which will be used as haul routes and site access.
- B. Provide traffic control of haul routes to expedite traffic flow and to minimize interference with normal traffic.

### 3.04 ADDITIONAL REQUIREMENTS

- A. The CONTRACTOR shall maintain the traveled way reasonable smooth and hard at all times, and shall be well drained and free of potholes, bumps, irregularities and depressions that hold or retain water. Construction operations shall be conducted to insure a minimum of delay to traffic. Stopping traffic for more than five minutes shall not be permitted unless specifically authorized, in writing, by the ENGINEER. The necessary equipment and personnel to attain and maintain a satisfactory riding surface shall be available and used as needed at all times when work is under way and when work is temporarily suspended for any period of time. Special attention to maintenance of a satisfactory traveled way shall be given during weekends, holidays and the winter season.
- B. The CONTRACTOR shall provide a sufficient number of competent flagmen in areas where traffic exists, particularly where construction equipment is operating. Each flagger shall use an orange safety vest. The vest shall be worn outside all other clothing worn by the flagger.
- C. Traffic shall be maintained in accordance with the details shown in conformance with the New York State Manual of Uniform Traffic Control Devices.
- D. Fencing
  - 1. The CONTRACTOR shall completely enclose all open excavations and all other potentially hazardous location, at the end of each working day by temporary fences. Fencing shall be not less than four feet in height, mounted in steel angles or other satisfactory means of support rigidly driven into the ground and spaced at intervals not to exceed eight feet. A minimum of one flasher per fifteen feet of fencing will be required. In areas where an excavation is to remain open in excess of 14 calendar days, rigid fencing will be required having supports at intervals not to exceed four feet. Snow fence, cyclone fence, or wire fabric with rectangular mesh are considered minimally acceptable fencing materials.
  - 2. The ENGINEER in charge may limit, extend, include or exclude areas to be fenced as conditions warrant.
- E. Where sidewalk has been removed by the CONTRACTOR, he will be responsible for establishing a temporary stabilized walk for pedestrian traffic within 24 hours after removal of the sidewalk. This sidewalk may be located in the location of the

original sidewalk or adjacent to the original sidewalk, providing there is an adequate right-of-way and the new location is safe for pedestrian traffic. The minimum width of the walkway is 4 feet. No additional Payment will be made for installing and/or maintaining this walkway by the CONTRACTOR.

- F. All existing highway signs and supports within the Contract limits are to remain and are to be maintained for the duration of the Contract by the CONTRACTOR.
- G. On postal routes, mailboxes serviced from motor vehicles shall be maintained by the CONTRACTOR in a usable location during construction. The CONTRACTOR should not move any mailbox which contains mail. He will advise the property owner to remove such mail before he moves the box. Before acceptance of the work, any mailbox which has been disturbed or removed shall be replaced in size, kind and type by the CONTRACTOR in a location acceptable to the property owner and the ENGINEER.
- H. CONTRACTOR must provide access to all school buses and emergency vehicles including ambulances, police cars, fire engines, etc., traveling through or stopping at any part of the construction site. At his expense, CONTRACTOR will yield to these vehicles and cease construction activities, as necessary.

END OF SECTION

## SECTION 01720

### SURVEY DATA

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. CONTRACTOR shall keep neat legible notes of all measurements and calculations made by him while surveying and laying out the Work. Furnish copies of notes to ENGINEER every two weeks or as requested.
- B. When any survey monument or property marker, whether of stone, concrete, wood, or metal, or a mark on the pavement, designating the lines of private property, is in the line of any trench or other construction work and may have to be removed, the CONTRACTOR shall notify the ENGINEER in writing at least 24-hours in advance of removal. Under no circumstances shall such monument or marker be removed or disturbed by the CONTRACTOR or by any of his subcontractors, employees, or agents, without a written order from the ENGINEER. The CONTRACTOR shall furnish the necessary labor and materials required in resetting any monument or property marker under the direct supervision of the ENGINEER. Should any monument be destroyed through accident, neglect or other cause, the CONTRACTOR will be required at his own expense to employ a licensed surveyor acceptable to the ENGINEER to reestablish the monument or marker.

##### 1.02 PIPELINE ELEVATIONS

- A. CONTRACTOR shall take survey elevation of the top of the newly installed pipeline at all tees; changes in vertical alignment; and, at 100 foot intervals.
- B. Survey elevations shall be performed to NAD83 datum.

##### 1.03 SUBMITTALS

- A. One copy of all notes shall be furnished to the ENGINEER and one copy furnished to the OWNER with Record Drawings.

#### PART 2 - MATERIALS (NOT USED)

#### PART 3 - EXECUTION (NOT USED)

END OF SECTION

## SECTION 02316

### SELECT GRANULAR MATERIALS

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work Specified  
Select granular materials shall be used in bedding, pipe encasement, or backfill and as specified or as directed by the ENGINEER.
- B. Related Work Specified Elsewhere
  - 1. Section 02317 - Rock Excavation
  - 2. Section 02351 - Excavation, Backfill and Trenching
  - 3. Section 02900 - Restoration
  - 4. Section 15051 - Buried Piping Installation

##### 1.02 QUALITY ASSURANCE

- A. Reference Standards
  - 1. NYSDOT Standards, latest revision

##### 1.03 SUBMITTALS

- A. The CONTRACTOR shall furnish representative samples, sieve analysis and certification of specification compliance for the select granular materials to the ENGINEER and advise on the location of the source.
- B. The CONTRACTOR shall submit copies of proposed materials, methods and operations of backfilling and compaction to the ENGINEER for review prior to the start of work. A list of equipment to be used in CONTRACTOR'S Methods and Operations must be included.

#### PART 2 - PRODUCTS

##### 2.01 MATERIALS

- A. Bedding and Pipe Encasement
  - 1. NYSDOT No. 1 Crushed Stone or Crushed Gravel – bedding for PVC, DIP, and PCCP watermain.  
Thoroughly washed, clean, sound, tough, hard, crushed limestone conforming to the requirements of NYSDOT Item No. 703.0201 or crushed gravel conforming to the requirements of NYSDOT Item No. 703.0202, having the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	1-inch
90 - 100	1/2-inch
0 - 15	1/4-inch

2. NYSDOT No. 2A Crushed Stone or Crushed Gravel – bedding for DIP and PCCP watermain.  
 Shall be a No. 1 and No. 2 blend, thoroughly washed, clean, sound, tough, hard, crushed limestone conforming to the requirements of NYSDOT Item No. 703.0201 or crushed gravel conforming to the requirements of NYSDOT Item No. 703.0202, having the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	1-1/2-inch
93-100	1-inch
27-58	1/2-inch
0-8	1/4-inch

3. NYSDOT Concrete Sand – bedding for copper and polyethylene tubing.  
 Washed, fine aggregate sand shall conform to the requirements of NYSDOT Item No. 703.07, having the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	3/8-inch
90 - 100	No. 4
75 - 100	No. 8
50 - 85	No. 16
25 - 60	No. 30
10 - 30	No. 50
1 - 10	No. 100
0 - 3	No. 200

B. Select Backfill

1. NYSDOT Subbase Type 2 Crusher Run Stone or Crusher Run Gravel.  
 Material shall conform to the requirements of NYSDOT Item No. 304.12, having the following gradation by weight:

<u>% Passing</u>	<u>Sieve</u>
100	2-inch
25 - 60	1/4-inch
5 - 40	No. 40
0 - 10	No. 200

- C. Peagravel
  - 1. NYSDOT Type 1A Screened Gravel for the annular space between the carrier pipe and the casing pipe.  
Screened gravel shall conform to the requirements of NYSDOT Item No. 703.0203 and have the following gradation by weight:
 

<u>% Passing</u>	<u>Sieve</u>
100	1/2-inch
90 - 100	1/4-inch
0 - 15	1/8-inch
- D. Follow NYSDOT Standard Specifications if gradation data varies from those listed above.
- E. Recycled concrete or asphalt pavement shall not be allowed.
- F. Slag of any type shall not be allowed.
- G. Flowable fill shall not be allowed.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. General
  - 1. Select granular material as specified or directed for watermain bedding or encasement shall be placed in accordance with Section 02351 - Excavation, Backfill and Trenching and Section 15051 - Buried Piping Installation.
  - 2. Select backfill where specified or directed shall be placed in accordance with the backfilling provisions of Section 02351 - Excavation, Backfill & Trenching.

3.02 DISPOSAL OF DISPLACED MATERIALS

- A. Materials displaced through the use of the above materials shall be wasted or disposed of by the CONTRACTOR and the cost of such disposal shall be included in the appropriate bid item.

END OF SECTION

## SECTION 02351

### EXCAVATION, BACKFILL, AND TRENCHING

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work Specified
  - 1. The CONTRACTOR shall furnish all labor, materials, equipment, and incidentals necessary for excavation, trenching, backfill, and compaction as shown and specified. Disposal of excess and unsuitable excavated material is included.
  - 2. Backfill of excavations with acceptable materials as specified in other Sections.
  
- B. Related Work Specified Elsewhere
  - 1. Section 02316 - Select Granular Materials
  - 2. Section 02900 - Restoration
  - 3. Section 15051 - Buried Piping Installation

##### 1.02 QUALITY ASSURANCE

- A. Reference Standards
  - 1. ASTM A36, Structural Steel
  - 2. ASTM A328, Steel Sheet Piling
  - 3. ASTM D422, Particle-Size Analysis of Soils
  - 4. ASTM D698, Moisture-Density Relations of Soils, using 5.5 lb. Rammer and 12-inch Drop
  - 5. ASTM D1556, Density of Soil in Place by the Sand-Cone Method
  - 6. ASTM D1557, Moisture-Density Relations of Soils, using 10 lb. Rammer and 18-inch Drop
  - 7. ASTM D2321, Recommended Practices for Underground Installation of Pipe for Sewers and Other Gravity Flow Applications
  - 8. ASTM D2922, Density of Soil and Soil-Aggregate in Place by Nuclear Method (Shallow Depth)
  - 9. AISC Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings
  - 10. Occupational Safety and Health Administration (OSHA) Regulations
  - 11. Industrial Code Rule 23

## 1.03 SUBMITTALS

- A. Before any excavation begins, the CONTRACTOR shall obtain all permits and licenses required by governing authorities having jurisdiction and submit certified copies to ENGINEER prior to work being performed.
- B. The CONTRACTOR shall submit drawings submitted with a PE stamp, for information only, for the following items as required:
  - 1. Sheeting, shoring and bracing
  - 2. Dewatering systems
  - 3. Cofferdams
  - 4. Additional protection systems required
  - 5. Underpinning
  - 6. Underdraining
  - 7. Sediment and Erosion control
  - 8. Boring and Receiving Pits.
- C. The CONTRACTOR shall submit proposed materials, methods and operations of backfilling and compaction to the ENGINEER for review prior to the start of work. A list of equipment to be used in CONTRACTOR'S methods and operations must be included.
- D. All drawings shall be prepared and sealed by an independent professional engineer recognized as an expert in the specialty involved and licensed to practice in the State of New York. The drawings shall be submitted to the ENGINEER to establish compliance with the terms of the Contract Documents. Calculations shall not be submitted. Drawing submissions will not be checked and will not imply approval by the ENGINEER of the work involved. CONTRACTOR shall be wholly responsible for designing, installing, and operating whatever system is necessary to accomplish satisfactory sheeting, bracing, protection, underpinning, and dewatering.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Bedding and Select Backfill
  - 1. Bedding and select backfill material shall be in accordance with Section 02316 - Select Granular Materials.
- B. Backfill and Fill Materials
  - 1. Excavated materials may be used for backfill provided:
    - a. Material is sandy, loamy or similar to bank run gravel.
    - b. Material is free of debris, hazardous materials, frozen materials, organic or other deleterious materials. Material greater than 4-inches

- in any direction is unacceptable. Material greater than 2-inches in any direction is unacceptable for backfill directly against the watermain.
- c. Maximum dry density and optimum moisture content are determined in accordance with the above.
  - d. Material is reviewed and deemed acceptable by the ENGINEER.
2. Use select granular backfill within 5 feet or within a 1 on 1 slope from the trench to the edge of pavement of all roadways.
- C. Topsoil
1. Topsoil shall be furnished and installed and coordinated with Section 02900, Restoration.
- D. Explosives
1. Explosives are not allowed to be used nor allowed on site.
- E. Sheeting, Shoring & Bracing
1. Used material shall be in good condition, not damaged or excessively pitted. Unless otherwise specified, all sheeting to remain in place shall be new. New or used sheeting may be used for temporary work.
  2. All timber used for breast boards (lagging) shall be new or used, meeting the requirements for Douglas Fir Dense Construction grade or Southern Pine No. 2 Dense S3. Where close or tight sheeting is required, wood sheeting shall be tongued and grooved.
  3. All steel work for sheeting, shoring, bracing, cofferdams, etc. shall be designed in accordance with the provisions of the “Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings”, of the AISC except that field welding will be permitted.
  4. Steel sheet piling shall be manufactured from steel conforming to ASTM A328. Steel soldier piles, wales and braces shall be new or used and shall conform to ASTM A36.
  5. Steel sheeting shall have a minimum thickness of  $\frac{3}{8}$ -inch in web, unless otherwise specified.

## PART 3 - EXECUTION

### 3.01 INSPECTION

- A. The CONTRACTOR shall provide the ENGINEER with sufficient time and means to examine the areas and conditions under which excavating, filling and grading are to be performed. The CONTRACTOR shall notify the ENGINEER of conditions detrimental to the proper and timely completion of work. The CONTRACTOR shall not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the ENGINEER.

### 3.02 TEST PITS

- A. Where shown or ordered by the ENGINEER, the CONTRACTOR shall excavate and backfill test pits in advance of construction to determine conditions or location of existing facilities. The CONTRACTOR shall perform all work required in connection with excavating, stockpiling, maintaining, sheeting, shoring, backfilling and restoring the surface for the test pits.
- B. Test pits which the CONTRACTOR excavates that are not shown on the Drawings or specified or ordered shall be at the CONTRACTOR'S expense.
- C. No test pits will be dug prior to utility company stakeout.
- D. Cold patch for temporary repair shall be placed as directed by the ENGINEER.

### 3.03 EROSION CONTROL

- A. All necessary precautions shall be taken to preclude the contamination of any wetland or waterway by suspended solids, sediment, fuels, solvents, lubricants, epoxy coatings, paints, concrete leachate or any other environmentally deleterious substance associated with the project.
- B. All necessary precautions shall be taken to prevent the entry of raw concrete or concrete liquors into the waters and/or wetlands of the State of New York. Equipment washwater from this project shall not be allowed to enter any waterway or wetland.
- C. All sediments are to be retained on the project site through the use of hay bales, silt fences or other barriers, as specified or approved by the local authority having jurisdiction, to prevent erosion.
- D. All areas of soil disturbance resulting from this project shall be seeded with an appropriate perennial grass seed and mulched with hay or straw within one week of final grading. Mulch shall be maintained until a suitable vegetative cover has been established.
- E. Pumped groundwater collected from excavations shall not be allowed to be discharged directly to any wetland, waterway, or other water body.
- F. Contamination of any wetland, waterway, or other water body shall be cleaned and/or restored to the satisfaction of the ENGINEER and governing authorities at the expense of the CONTRACTOR.

### 3.04 EXCAVATION

- A. The CONTRACTOR shall perform all excavation required to complete the work as shown and specified. Excavations shall include earth, sand, clay, gravel, hardpan, boulders and ledge rock, decomposed rock, pavements, rubbish and all other materials within the excavation limits, except rock. Where the excavation is in rock meeting the definition in Section 02317 - Rock Excavation (requiring drilling, jack-hammering and hand removal), the rock shall be removed as specified in Section 02317.
- B. Excavations for pipelines, utilities and structures shall be open excavations, shored and braced where necessary, according to OSHA standards, to prevent possible injury to workmen and to new and existing structures or pipelines.
- C. Where the pipeline, utility or structure is to be placed below the ground water table, well-points, cofferdams or other acceptable methods shall be used to permit construction under dry conditions. Dry conditions shall prevail until concrete has reached sufficient strength to withstand earth and hydrostatic loads and until the pipelines are properly jointed, tested and backfilled.
- D. Pumping in excavations shall be done in such a manner so as to prevent damage to the existing subgrade, and to prevent the carrying away of unconsolidated concrete materials.
- E. Excavations for pipelines shall be made sufficiently wide to permit proper laying and jointing of the pipe. The trench width at the top of the pipe should not be greater than the outside diameter of the pipe barrel plus 2 feet, but shall be sufficient to allow thorough compacting of earth refill adjacent to the bottom half of the pipe. The depth of trench shall be sufficient to allow a minimum cover over the top of the pipe as shown on the drawings. The use of excavating equipment which requires the trench to be excavated to an excessive width will not be allowed. All trenches for buried piping shall be excavated at least 6 inches below the bottom of the pipe and backfilled with pipe bedding material as specified in Section 02316 – Select Granular Materials.
- F. Acceptable excavated materials shall be stockpiled in specified areas until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
  - 1. Locate and retain soil materials away from edge of excavations.
  - 2. Unsuitable backfill material shall be kept separate from all other material and shall be disposed of as specified hereinafter. Disposal of unsuitable and excess excavated material shall be accomplished immediately upon removal from the excavation.
  - 3. Stockpiles shall not be located such that they interfere with traffic or access to public or private property. If necessary, the CONTRACTOR shall maintain additional stockpile areas located elsewhere on the site, and shall transport

the suitable backfill material to and from such stockpile areas as required for the work.

4. In built-up districts and in streets where traffic conditions render it necessary, the material excavated from the initial opening shall be removed by the CONTRACTOR as soon as excavated, and the material subsequently excavated, if suitable for the purpose, shall be used to backfill the trenches in which pipe has been laid or structures have been built, and neither the excavated material nor materials of construction shall be stored on the streets or sidewalks.
- G. If the material at the design grade is unsuitable as determined by the ENGINEER, the CONTRACTOR, when ordered in writing, shall excavate additional material to the depth necessary and shall backfill to the proposed grade with select granular material.
- H. Unless otherwise directed or permitted, not more than 100 feet of trench in advance of the end of the completed pipe or structure therein shall be opened at any time. Every trench in rock shall be fully opened at least 30 feet in advance of any place where masonry or pipe is being laid. Any time when the CONTRACTOR'S crews are not on the job working, a trench length equal to or less than one-half of the last length of pipe installed may be left open, but properly covered or barricaded to protect the public.
- I. At such locations where two pipes may be installed in parallel in a common trench, and where specified, the CONTRACTOR shall install the pipes a minimum of 2 feet apart as measured horizontally from the outside diameter of pipe.

### 3.05 UNAUTHORIZED EXCAVATION

- A. All excavation outside the lines and grades shown and not specified, together with the removal and disposal of the associated material shall be at the CONTRACTOR'S expense. The unauthorized excavation shall be filled as directed by the ENGINEER with select compacted backfill at the CONTRACTOR'S expense. Claims and damages resulting from the CONTRACTOR'S unauthorized excavation will be his sole responsibility.

### 3.06 DRAINAGE AND DEWATERING

- A. General
  1. Prevent surface and subsurface water from flowing into excavations and from flooding adjacent areas.
  2. Remove water from excavation as fast as it collects.
  3. Maintain the ground water level at least 2 feet below the bottom of the excavation to provide a stable surface for construction operations and to prevent damage to the work during all stages of construction.

4. Provide and maintain pumps, sumps, suction and discharge lines and other dewatering system components necessary to convey water away from excavations.
5. Provide sediment traps when water is conveyed into water courses.
6. Notify the ENGINEER before shutting down dewatering systems for any reason.
7. Standing water shall not be permitted in the excavation at any time. If the material at the design grade becomes unsuitable or contaminated due to the actions of the CONTRACTOR, the CONTRACTOR shall excavate additional material to the depth necessary and shall backfill to the proposed grade with select fill or crushed stone.
8. 100% stand-by pumps (gasoline powered) shall be maintained at the site at all times.
9. Any hardships created by the temporary dewatering for this Contract which adversely affects the water supply to local property owners, shall be satisfactorily resolved by the CONTRACTOR, including the provision of temporary water service, if required, at no additional cost to the OWNER.
10. Obtain request permits from agencies of jurisdiction, NYSDEC, and USACOE, for any water being discharged into rivers, streams, or water courses.

B. Disposal of Water Removed by Dewatering Systems

1. Dispose of all water removed from the excavation in such a manner as not to endanger public health, property, or any portion of the work under construction or completed.
2. Dispose of water in such a manner as to cause no inconvenience to the owner or others on or adjacent to the site.
3. Convey water from the excavation in a closed conduit. Do not use trench excavations as temporary drainage ditches.
4. Disposal of water shall be by specified methods and shall not cause erosion or sedimentation to occur in existing drainage systems. All sedimentation or blocking of existing systems shall be thoroughly cleaned and returned to original condition by the CONTRACTOR at his expense.
5. Damage caused by the CONTRACTOR'S operations to public or private property shall be repaired by him to the satisfaction of the ENGINEER and the damaged property owner at the CONTRACTOR'S expense.
6. The CONTRACTOR shall perform all work, furnish all materials and install all measures required to reasonably control soil erosion resulting from construction operations and prevent excessive flow of sediment from the construction site. Such work may include the installation of water diversion structures, diversion ditches and sediment basins and seeding, mulching or sodding critical areas to provide temporary protection. The CONTRACTOR shall submit a plan showing the methods to be used for controlling erosion

and sedimentation during construction along with the schedule of construction operations to the ENGINEER for review.

7. All erosion and sediment control practices shall be in place prior to any grading operations and installation of proposed structures or utilities.
8. All erosion and sediment control practices shall be left in place until construction is completed and/or area is stabilized.
9. Where necessary, disturbed areas shall be temporarily seeded and/or mulched until proper weather conditions exist for establishment of a permanent vegetative cover.

### 3.07 SHEETING, SHORING, AND BRACING

#### A. General

1. Unless otherwise shown or specified, excavations shall be open, shored and braced or sheeted where necessary to prevent injury to workmen, structures, pipelines and utilities.
2. Structures within 100 feet of sheeting installations shall be subject to a pre-construction survey to identify and record existing structural conditions. In the instance of private residencies, the homeowners shall be contacted directly. These inspections shall be carried out by a pre-inspection firm experienced in this line of work.
3. During the actual construction process, the CONTRACTOR shall provide the monitoring and recording of the actual vibrations generated. A baseline of ambient vibration levels shall be established prior to driving sheet piling.
  - a. The particle acceleration during the driving of the sheet piling shall not exceed 2.0 FPS.
  - b. The CONTRACTOR will be required to change the construction methods if the work is resulting in unacceptable vibration levels.
4. All municipal, county, state, and federal ordinances, codes, regulations, and laws shall be observed. The CONTRACTOR shall provide all sheeting, shoring, and bracing which conforms to New York State Department of Labor – Industrial Code Note 23 and all applicable sections of the 1970 Occupational Safety and Health Act (OSHA), and any other requirements as necessary.
5. All municipal, county, state and federal ordinances, codes, regulations, laws and OSHA regulations shall be observed.
6. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down the shoring and bracing as excavation progresses.
7. Safe and satisfactory sheeting, shoring and bracing shall be the entire responsibility of the CONTRACTOR.
8. The CONTRACTOR shall be held accountable and responsible for the sufficiency of all shoring and bracing used and for all damage to persons or

property resulting from the improper quality, strength, placing, maintaining or removing of the same.

9. The ENGINEER'S permission to proceed with work in either a sheeted, shored braced or open trench condition shall in no way relieve the CONTRACTOR from the above responsibilities.
10. The clearances and types of temporary structures, insofar as they affect the character of the finished work, and the design of steel sheeting to be left in place, will be subject to the review of the ENGINEER, but the CONTRACTOR shall be solely responsible for the adequacy of all sheeting, shoring, bracing, cofferdamming, etc.
11. Unless otherwise shown, specified, or ordered, all materials used for temporary construction shall be removed when work is completed. Such removal shall be made in a manner not injurious to the pipelines or structures.
12. All steel sheet piling designed to remain in place shall be new materials. New or used materials may be used for temporary work.
13. Steel sheet piling shall be manufactured from steel conforming to ASTM A328. Steel for soldier piles, wales, and braces shall be manufactured to conform to ASTM A36.

#### B. Sheeting Left in Place

1. Steel sheet piling shall be left in place or where conditions are such that the removal of sheeting will endanger the work or adjacent pipes or structures or when ordered in writing to be left in place by the ENGINEER. It shall consist of rolled sections of the continuous interlocking type unless otherwise specified. The type and design of the sheeting and bracing shall conform to the above specifications for all steel work for sheeting and bracing.
2. Steel sheet piling to be left in place shall be driven straight to the lines and grades as shown or directed. The piles shall penetrate into firm materials with secure interlocking throughout the entire length of the pile. Damaged piling having faulty alignment shall be pulled and replaced by new piling.
3. The type of guide structure used and method of driving for steel sheet piling to be left in place shall be submitted to the ENGINEER for review. Jetting will not be permitted.
4. The CONTRACTOR shall cut off piling left in place at least 2 feet below road surface or to the grades shown or ordered by the ENGINEER and shall dispose of the cutoffs.
5. Portions of sheeting or soldier piles and breast boards which are in contact with concrete shall be left in place.

#### C. Removal of Sheeting and Bracing

1. Sheeting and bracing shall be removed from excavation unless otherwise indicated by the ENGINEER. Removal shall be done so as to not cause injury to the work.

- a. Wood or steel sheeting shall not be removed when adjacent to structures, pavement, pipes, or any other public or private property where removal may cause damage to such property.
    - b. Fill all voids left by removal of sheeting with select fill.
  2. Removal of sheet piling shall be done so as not to cause injury to the Work. Removal shall be equal on both sides of excavation to ensure no unequal loads on pipe or structures.
- D. Pipeline Alignment in New York State Department of Transportation and Erie County Highway Department Right-Of-Way:
  1. The New York State Department Of Transportation and Erie County Highway Department require all trenches or excavations which fall within a 1 on 1 slope as measured from the edge of pavement to be tight-sheeted with pre-driven steel sheet piling prior to excavation.
    - a. The design of the predriven steel sheet piling and bracing system is the responsibility of the CONTRACTOR. The ENGINEER may reject any materials which he regards as unsound.
    - b. A copy of all predriven steel sheet piling and bracing system designs shall be submitted to the ENGINEER for his information before installation of same. Each drawing and computation page shall display the seal and signature of a licensed New York State professional engineer. This information must also be submitted to the Agency having jurisdiction for review and must meet with that Agency's approval.
    - c. The CONTRACTOR'S submittal to the ENGINEER shall include written verification from the Agency of jurisdiction that the information being submitted to the ENGINEER has been approved by that Agency.
  2. If devices other than pre-driven steel sheet piling are approved by the Agency of jurisdiction in areas designated as requiring temporary sheeting, the CONTRACTOR may (with the ENGINEER'S review) be allowed to use them. However, the costs of furnishing and using these devices will be considered as included in the unit prices bid for the various pipe sections.
- E. In areas where the Drawings call for sheeting to remain in place, alternate sheeting methods will not be allowed. Only pre-driven, steel sheet piling systems designed for the CONTRACTOR by a professional engineer will be allowed in these areas.

### 3.08 BACKFILL AND COMPACTION

- A. All backfill required for trenches and structures required to provide the finished grades shown and as described herein shall be furnished, placed and compacted in 6 inch lifts by the CONTRACTOR. Unless otherwise specified or required, fill shall be obtained from the excavated materials. All materials used for filling and

backfilling shall be soil of acceptable quality, free from boulders, frozen lumps, wood, stumps, sludge, or other organic matter or other deleterious or hazardous materials. Excavated materials meeting these requirements and approved by the ENGINEER may be used as backfill.

- B. Rock and/or earth material may be encountered during the work that is unsuitable for backfilling. When this material is encountered, it shall be disposed of in the specified manner, possibly resulting in a shortage of suitable backfill material. In this event, the CONTRACTOR shall be responsible for furnishing, delivering and installing clean earth or select backfill materials to properly and completely backfill the excavation. Backfill material for these situations may be obtained from other areas of the project where suitable material is available or from offsite locations as approved by the ENGINEER. All backfill material is subject to the ENGINEER'S review and must meet the minimum requirements of the specifications above.
- C. Backfill excavations as promptly as work permits, but not until completion of the following:
  - 1. Inspection by the ENGINEER of all work within the excavation.
  - 2. Inspection, testing approval, and recording of locations of underground utilities, connections, branches, structures and other facilities.
  - 3. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in a manner to prevent settlement of the structure or utilities, or leave in place if required.
  - 4. Removal and proper disposal of trash and debris.
- D. Excavation shall be kept dry during backfilling operations. Backfill around piping and structures shall be brought up evenly on all sides.
- E. The minimum density to be obtained during backfilling operations shall be 95 percent and is a percentage of the maximum density obtained in the laboratory as defined in ASTM D698 Method C including Note 2. This percentage is of modified Proctor density. In-place density determinations shall be made using a sand density cone or equivalent method as specified by ASTM D1556. If any bricks, bottles, pieces of metal, debris or other foreign matter larger than  $\frac{3}{4}$ -inch size are encountered in the density test hole, a different test location shall be chosen. The ENGINEER will determine the frequency of field testing required to determine the density of the fill and shall direct the number and location of density tests. All equipment necessary to determine fill density, including nuclear density meters, shall be supplied by the CONTRACTOR.
- F. The water content of fill material shall be controlled during placement within the range necessary to obtain the density specified. In general, the moisture content of the fill shall be within 5 percent dry and 2 percent wet of the optimum moisture

content for the specified density as determined by laboratory tests. The CONTRACTOR shall perform all necessary work to adjust the water content of the material to within the range necessary to permit the density specified. No fill material shall be placed and no compaction of fill will be permitted when there is any standing water in the trenches or when the fill material or the ground the fill is to be placed on is frozen.

- G. The CONTRACTOR is not allowed to access any part of an existing water supply system (fire hydrants, etc.) as a source of water for any reason during construction activities, including the use of water for backfilling to obtain the proper moisture content.
- H. If the specified densities are not obtained because of the CONTRACTOR'S improper control of placement or compaction procedures, or because of inadequate or improperly functioning equipment, the CONTRACTOR shall perform whatever work is required to provide the specified densities. This work shall include complete removal of unacceptable fill areas, replacement and recompaction until acceptable fill is provided.
- I. All backfill in pipe trenches shall be placed in horizontal layers not exceeding 6 inches in depth and thoroughly compacted before the next layer is placed.
- J. Where pipe is laid in rock excavation, crushed stone or gravel fill shall be carefully placed and tamped over the rock before the pipe is laid. After laying, pipe, the balance of the backfill shall be placed as described herein above.
- K. Placement:
  - 1. Place pipe bedding, select backfill and/or earth backfill or borrow materials, as specified herein and in Section 15051- Buried Piping Installation.
  - 2. Trenches under roadways shall be backfilled with select backfill material for the entire length of the open cut crossing plus 5 feet back from the edge of pavement or a distance equal to a 1 on 1 slope to the invert, whichever is greater.
  - 3. Where shoulders are excavated, the trench shall be backfilled with select granular material.
  - 4. The entire trench area under driveways, parking areas, and sidewalks, shall be backfilled with select granular material in accordance with the Contract Drawings and Specifications.
  - 5. Prior to commencing with the backfilling operation, the CONTRACTOR shall submit information to the ENGINEER such as catalog cuts, specification sheets, etc., describing the type of compaction equipment he intends to use.

- L. Pipe Trench Preparation
  - 1. Braced trench width shall be minimized to greatest extent practical but shall conform to the following:
    - a. Trench width shall be sufficient to provide room for installing, jointing and inspecting piping, as shown on Contract Drawings.
    - b. Enlargements at pipe joints may be made if required and specified by the ENGINEER.
    - c. Trench width shall be sufficient for sheeting, bracing, sloping, and dewatering.
    - d. Trench width shall be sufficient to allow thorough compacting of backfill.
    - e. Do not use excavating equipment which requires the trench to be excavated to excessive width.
  - 2. Depth of trench shall be as shown. If required, depths may be revised as specified by the ENGINEER.
- M. The CONTRACTOR shall repair any settlement that occurs at no additional cost to the OWNER.

### 3.09 GRADING

- A. General
  - Uniformly grade areas within limits of grading under this Section including adjacent transition areas. Smooth subgrade surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.
- B. Turfed Areas
  - Finish areas to receive topsoil to within not more than 1 inch above or below the required subgrade elevation.
- C. Walks and Pavements
  - Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than  $\frac{1}{2}$  inch above or below the required subgrade elevation.
- D. Slabs
  - Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 3 inch when tested with a 10 foot straightedge.
- E. Compaction
  - After grading, compact subgrade surfaces to the depth and percentage of maximum density required.

- F. All existing drainage swales and ditches, if disturbed, shall immediately, upon completion of pipe installation, be restored to proper lines and grades. CONTRACTOR shall ensure the final drainage facilities are in working condition and acceptable to the agency of jurisdiction.

### 3.10 PAVEMENT SUBBASE COURSE

- A. **General**  
Place subbase material, in layers of specified thickness, over ground surface to support the pavement base course.
- B. **Grade Control**  
During construction, maintain lines and grades including crown and cross-slope of subbase course.
- C. **Shoulders**  
Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials as specified, placed in such quantity to compact to thickness of each subbase course layer. Compact and roll at least 12 inch width of shoulder simultaneously with compacting and rolling of each layer of subbase course.
- D. **Placing**  
Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations. When a compacted subbase course is shown to be 6 inches thick or less, place material in a single layer. When shown to be more than 6 inches thick, place material in equal layers, except no single layer more than 6 inches or less than 3 inches in thickness when compacted.

### 3.11 DISPOSAL OF EXCAVATED MATERIALS

- A. Material removed from the excavations which does not conform to the requirements for fill or is in excess of that required for backfill shall be hauled away by the CONTRACTOR and disposed of in compliance with Municipal, County, State, Federal or other applicable regulations at no additional cost to the OWNER.
- B. The CONTRACTOR shall not dispose waste excavated material in any of the following locations:
  - 1. Wetland areas.
  - 2. Flood plains.
  - 3. Any area where excess siltation will damage or pollute receiving water.
  - 4. Disposal of excess materials shall only be allowed at locations approved by NYSDEC Region 9.

3.12 RESTORATION AND CLEAN-UP

- A. Following installation, the CONTRACTOR shall restore all areas to their original condition to the requirements of Section 02900 - Restoration, and to the satisfaction of the ENGINEER.

END OF SECTION

## SECTION 02900

### RESTORATION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. **Work Specified**  
The work specified shall include all labor, material, equipment, services and incidentals necessary to restore surfaces, pavements, sidewalks, driveways, curbs, gutters, lawns, culverts, and other features disturbed, damaged, or destroyed during the performance of the work under or as a result of the operations of the Contract.
- B. **Related Work Specified Elsewhere**
  - 1. Section 02316 - Select Granular Materials
  - 2. Section 02317 - Rock Excavation
  - 3. Section 02351 - Excavation, Backfill, and Trenching
  - 4. Section 03300 - Concrete
  - 5. Section 15051 - Buried Piping Installation

##### 1.02 QUALITY ASSURANCE

- A. The quality of materials and the performance of work used in the restoration shall produce a surface or feature equal to the condition of each before the work began.
- B. **Reference Standards**
  - 1. American Association of Nurserymen (AAN)
  - 2. ASTM D698, Standard Compaction Test
  - 3. ASTM D2487, Classification of Soils for Engineering
  - 4. ASTM D2974, Standard Test Method for Moisture, Ash and Organic Matter of Peat and Other Organic Soils
  - 5. New York State Department of Transportation Standard Specifications, latest revision

##### 1.03 SUBMITTALS

- A. **CONTRACTOR** shall submit the following submittals:
  - 1. The location of source and data for off-site topsoil.
  - 2. Analysis of the seed.
  - 3. Should a hydroseeder be used, the **CONTRACTOR** shall submit all data including material and application rates.
  - 4. Mix designs for asphalt.

## 1.04 SCHEDULE OF RESTORATION

- A. A schedule of restoration operations shall be submitted by the CONTRACTOR for review.
  - 1. After an accepted schedule has been agreed upon it shall be adhered to unless otherwise revised by the ENGINEER.
- B. In general, permanent restoration of traveled surfaces will not be permitted until one months time has elapsed after excavations have been completely backfilled as specified.
- C. The replacement of surfaces at any time, as scheduled or as directed, shall not relieve the CONTRACTOR of responsibility to repair damages by settlement or other failures.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. Topsoil shall be unfrozen friable clayey loam free from clay lumps, stones, roots, sticks, stumps, brush, hazardous materials, or foreign objects.
- B. Fertilizer shall be a standard quality commercial carrier of available plant food elements. A complete prepared and packaged material containing a minimum of 10 percent nitrogen, 10 percent phosphoric acid and 10 percent potash.
  - 1. Each bag of fertilizer shall bear the manufacturer=s name and guaranteed statement of analysis.
- C. Seed mixtures shall be of commercial stock of the current season=s crop and shall be delivered in unopened containers bearing the guaranteed analysis of the mix.
  - 1. All seed shall meet the New York State Department of Transportation 713-04 standard specifications for germination and purity.

D. Seed Mixtures:

<u>Specia</u>	<u>Lawn Areas*</u>	<u>Non-maintained Areas*</u>
Kentucky Bluegrass	50	20
Creeping Red Fescue	30	20
Manhattan or		
Pennfine Ryegrass	20	60
* % by weight		

- E. Mulch shall be stalks of oats, wheat, rye or other acceptable crops which are free from noxious weeds.

## 2.02 MATERIALS

- A. Paving Materials: The source and gradation of materials shall be acceptable to the ENGINEER. Materials shall conform to the following:
1. Pavement Sub-Base Course Material: The sub-base course materials shall be select backfill material as specified in Section 02316 of the Specifications.
  2. Tack Coat: The tack coat shall be NYSDOT Section 702, Item 702-3401 Asphalt Emulsion (HFMS-2H).
  3. Bituminous Base Course: Base course where required shall be placed in accordance with the NYSDOT Specifications, Section 403 – Hot Mix Asphalt Concrete Pavement. The material shall be NYSDOT, Item 403.12, Type 2, Base Course.
  4. Bituminous Binder Course: Binder course pavement where required shall be placed in accordance with NYSDOT Specifications, Section 403 – Hot Mix Asphalt Concrete Pavement. The binder course pavement material shall be NYSDOT Item No. 403.13, Type 3, Binder Course.
  5. Bituminous Surface Course: The bituminous concrete surface course shall be a hot mix bituminous material consisting of a mixture of mineral aggregate and asphalt cement as approved by ENGINEER. The surface course shall be NYSDOT Item No. 403.19, Type 7F, Top Course.
- B. Concrete Materials: Concrete used for road bases, roads, driveways, sidewalks, curbs, or similar items shall be a 4,000 psi mix. Concrete and reinforcing materials shall be as specified in Section 03300 of these Specifications.

## 2.03 MATERIALS TESTING.

- A. All materials must be tested and approved prior to delivery to the site. Samples of materials proposed for use shall be submitted by the CONTRACTOR to the ENGINEER and the testing laboratory. Samples of the materials shall be submitted at least ten days in advance of its anticipated use.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Temporary Pavement
1. Immediately upon completion of backfilling of the trench or excavation, the CONTRACTOR shall place a temporary pavement over all disturbed areas of streets, driveways, sidewalks, and other traveled places where the original surface has been disturbed as a result of his operations.
  2. The temporary pavement shall consist of compacted select backfill surfaced with cold patch to such a depth as required to withstand the traffic to which it will be subjected.

3. The surface of the temporary pavement shall conform to the slope and grade of the area being restored.
4. For dust prevention, the CONTRACTOR shall treat all surfaces, not covered with cold patch, as frequently as may be required
5. The temporary pavement shall be maintained by the CONTRACTOR in a safe and satisfactory condition until such time as the permanent paving is completed. The CONTRACTOR shall immediately remove and restore all pavement as shall become unsatisfactory.

**B. Permanent Pavement Replacement**

1. The permanent and final re-paving of all streets, driveways and similar surfaces where pavement has been removed, disturbed, settled or damaged by or as a result of performance of the Contract shall be repaired and replaced by the CONTRACTOR, by a new and similar pavement, consisting of base, binder, and/or top courses each having the same depth as existing pavement or as required by the local community or Highway Permit.
  - a. The top surface shall conform with the grade of existing adjacent pavement and the entire replacement shall meet the current specifications of the local community for the particular types of pavement.
  - b. Where the local community has no specification for the type of pavement, the work shall be done in conformity with the New York State Department of Transportation Standard which conforms the closest to the type of surfacing being replaced, as determined by the ENGINEER and with the following specifications:
    - 1) Unless specified otherwise, replacement of existing roads under the jurisdiction of New York State, Counties or Cities, shall be constructed to the following requirements:
      - a) Pavement subbase as outlined under Section 02316.
      - b) Base Course Pavement – 8 inches minimum compacted thickness or combination of concrete base where encountered.
      - c) Binder Course Pavement – 1-1/2 inches minimum compacted thickness.
      - d) Surface Course Pavement – 1 inch minimum compacted thickness.
    - 2) Unless specified otherwise, replacement of existing roads under the jurisdiction of Towns or Villages shall be constructed to the following requirements:
      - a) Pavement subbase as outlined under Section 02316.
      - b) Binder Course Pavement – 4 inches minimum compacted thickness.

- c) Surface Course Pavement – 2 inches minimum compacted thickness.
    - c. All required permits for local governing bodies shall be obtained.
    - d. Install or reinstall pavement striping in accordance with NYSDOT Standard Specifications.
- C. Preparation for Permanent Pavement
  1. When scheduled and within the time specified, the temporary pavement shall be removed and base prepared, at the depth required by the local community or Highway Permit, to receive the permanent pavement.
    - a. The base shall be brought to the required grade and cross-section and thoroughly compacted before placing the permanent pavement.
    - b. Any base material which has become unstable for any reason shall be removed and replaced with compacted base materials.
    - c. Cuts which are not straight will require another saw-cutting further from the trench. Additional select backfill and pavement needed for restoration outside the defined pay limits will be installed and paid for by the CONTRACTOR.
  2. Prior to placing the permanent pavement, all service boxes, manhole frames and covers and similar structures within the area shall be adjusted to the established grade and cross-section.
  3. The edges of existing asphalt pavement shall be cut a minimum of one foot beyond the excavation or disturbed base whichever is greater.
    - a. All cuts shall be parallel or perpendicular to the centerline of the street.
    - b. All cuts will be made in straight continuous lines by saw-cutting or other acceptable technique.
    - c. Additional one-foot saw cut may be required for top course if shown on the drawings or required by permit.
  4. Install or reinstall traffic inductance loops in accordance with NYSDOT Standard Specifications by a firm which is qualified by the NYSDOT.
- D. Bituminous Tack Coat
  1. The tack coat shall be uniformly applied by a pressure distributor to a prepared clean pavement. The tack coat shall be applied as approved by the ENGINEER to offer the least inconvenience to traffic and to permit one-way traffic, where practical, to prevent pickup or tracking of the bituminous material.
  2. Tack coat shall not be applied on a wet pavement surface or when the surface temperature is below 45 degrees F. The temperature and areas to be treated shall be approved by the ENGINEER prior to application. The application rate shall be 0.03 to 0.07 gallons per square yard as approved by the ENGINEER.

- E. Asphalt Pavement
1. The permanent asphalt pavement replacement for streets, driveways and parking area surfaces shall be replaced with bituminous materials of the same depth and kind as the existing unless otherwise specified.
  2. Prior to placing of any bituminous pavement tack coat shall be applied to the edges of the existing pavement and other features.
  3. The furnishing, handling and compaction of all bituminous materials shall be in accordance with the New York State Department of Transportation Standards latest edition.
- F. Cold Milling
1. Cold milling of existing surfaces shall follow New York State Department of Transportation Standard Specifications, latest edition.
  2. Material removed during the milling process will become the property of the CONTRACTOR and shall be disposed of at an acceptable location off-site.
  3. CONTRACTOR must maintain drainage into all gutters and catch basins during the milling operation.
- G. Concrete Pavement and Pavement Base
1. Concrete pavements and concrete bases for asphalt, brick or other pavement surfaces shall be replaced with Class "B" concrete, air-entrained as specified in Section 03300.
  2. Paving slabs or concrete bases shall be constructed to extend one foot beyond each side of the trench and be supported on undisturbed soil. Where such extension of the pavement will leave less than two feet of original pavement slab or base, the repair of the pavement slab or base shall be extended to replace the slab to the original edge of the pavement or base unless otherwise indicated on the Contract Drawings.
  3. Where the edge of the pavement slab or concrete base slab falls within the excavation, the excavation shall be backfilled with Select Backfill compacted to 95 percent maximum dry density as determined by ASTM D698 up to the base of the concrete.
  4. The new concrete shall be of the same thickness as the slab being replace and shall contain reinforcement equal to the old pavement.
    - a. New concrete shall be placed and cured in accordance with the applicable provisions of the State Department of Transportation Standards.
- H. Stone or Gravel Pavement
1. All pavement and other areas surfaced with stone or gravel shall be replaced with material to match the existing surface unless otherwise specified.
    - a. The depth of the stone or gravel shall be at least equal to the existing or at least 6 inches.

- b. After compaction, the surface shall conform to the slope and grade of the area being replaced.
- c. Stone material used shall comply with the New York State Department of Transportation Standard Specifications, latest edition.

I. Driveways

1. Asphalt Driveways

- a. After the watermain has been installed and the trench properly backfilled, the CONTRACTOR shall cut back the drive one foot each side of the trench. The asphalt shall be cut with carborundum saw or other device to give a uniform and continuous straight edge. Where watermain or service piping are installed under drive aprons the ENGINEER may specify the replacement of the entire apron and the CONTRACTOR shall remove and replace same to its base.
- b. The cut edge shall be painted with a bituminous seal coat and asphalt shall then be replaced to equal or exceed the existing asphalt in quality and depth.
  - 1) In no case shall the finished thickness of the asphalt driveway be less than four (4) inches, a minimum of three (3) inches of binder and one (1) inch of top to match the existing driveway.
  - 2) Courses shall be laid in one (1) inch lifts and compacted with a minimum two (2) ton roller or other mechanical means specified by the ENGINEER.
  - 3) If the existing drive was in the opinion of the ENGINEER recently sealed, then the CONTRACTOR shall apply one (1) coat of coal tar emulsion sealer over the top lift. In no case shall cold patch be considered pavement, but may be used temporarily as an expedient, the cost of which will be borne by the CONTRACTOR.

2. Concrete Driveways

- a. The CONTRACTOR shall be responsible for the proper consolidation of the sub-grade before laying the new driveway, and any settlement or failure of the new driveway shall be repaired or replaced by the CONTRACTOR to the satisfaction of the ENGINEER.
- b. Where drives are encountered, the CONTRACTOR shall cut the concrete each side of the trench limits using a concrete saw at breaks in the drive or at expansion joints at the direction of the ENGINEER. Any concrete broken beyond the cut or break line will be replaced at the CONTRACTOR'S expense.
- c. The drive shall then be replaced to equal or exceed the existing drive in quality and depth.

- 1) Reinforcing shall be installed in all replacements, tying it to existing reinforcing where it protrudes from the cut edge. 6 x 6 x 6 welded wire mesh or equal shall be used. The CONTRACTOR shall then install Transit Mix Concrete meeting NYSDOT specifications to the depth of the original base, or a minimum of six (6") inches, whichever is more.
- 2) The surface shall be finished to match the existing surface. The CONTRACTOR shall properly cure all concrete after placing and shall protect it from damage from all types of traffic and harm prior to final setting.

J. Concrete Walks, Curbs and Gutter Replacement

1. Concrete walks, curbs and gutters removed or damaged in connection with or as a result of the construction operations shall be replaced with new construction.
  - a. The minimum replacement will be a flag or block of sidewalk and five feet of curb or gutter.
2. Walks shall be constructed of concrete, air-entrained with NYSDOT No.1 stone aggregate on a 4-inch base of compacted gravel or stone.
  - a. The walk shall be not less than 4 inches in thickness or to match the thickness of the replaced walk, shall have construction joints spaced to match the existing walks, and shall have expansion joints spaced not more than 50 feet apart and shall be sloped at right angles to the longitudinal centerline approximately  $\frac{1}{8}$ -inch per foot of width.
3. One-half inch expansion joint material shall be placed around all objects within the sidewalk area as well as objects to which the new concrete will abut, such as valve boxes, manhole frames, curbs, buildings and others.
4. Walks shall be hand-floated and broom-finished, edged and grooved at construction joints and at intermediate intervals matching those intervals of the walk being replaced.
  - a. The intermediate grooves shall be scored a minimum of 3 of the depth of the walk.
  - b. The lengths of blocks formed by the grooving tool, and distances between construction and expansion joints shall be uniform throughout the length of the walk in any one location.
5. The minimum length of curb or gutter to be left in place or replaced shall be 5 feet. Where a full section is not being replaced, the existing curb or gutter shall be saw cut to provide a true edge.
  - a. The restored curb or gutter shall be the same shape, thickness and finish as being replaced and shall be built of the same concrete and have construction and expansion joints as stated above for sidewalks.

6. All concrete shall be placed and cured as specified in Section 03300, Concrete.

K. Lawns and Improved Areas

1. The area to receive topsoil shall be graded to a depth of not less than 4 inches or as specified, below the proposed finished surface. If the depth of existing topsoil prior to construction was greater than 4 inches, topsoil shall be replaced to that depth.
  - a. All debris and inorganic material shall be removed and the surface loosened for a depth of 2 inches prior to the placing of the topsoil.
  - b. The topsoil shall not be placed until the subgrade is in suitable condition and shall be free of excessive moisture and frost.
  - c. Topsoil placed in areas of earth excavation will not be placed until suitable earth compaction has been performed.
2. Satisfactory topsoil removed from the excavations shall be placed on the prepared subgrade to the depth required.
  - a. In the event the topsoil removed during excavation is unsatisfactory or inadequate to obtain the required finish grades, the CONTRACTOR shall furnish the required quantity of satisfactory topsoil from specified sources off site.
  - b. All topsoil shall be free from stones, roots, sticks and other foreign substances and shall not be placed in a frozen or muddy condition.
  - c. The finished surface shall conform to the lines and grades of the area before disturbed or as shown on the Contract Drawings. Any irregularities shall be corrected before the placement of fertilizer and seed.
3. The fertilizer shall be applied uniformly at the rate of 20 pounds per 1000 square feet.
  - a. Following the application of the fertilizer and prior to application of the seed, the topsoil shall be scarified to a depth of at least 2 inches with a disc or other suitable method traveling across the slope if possible.
4. When the topsoil surface has been fine graded, the seed mixture shall be uniformly applied upon the prepared surface with a mechanical spreader at a rate of not less than 5 pounds per 1000 square feet.
  - a. The seed shall be raked lightly into the surface and rolled with a light hand lawn roller.
  - b. Seeding and mulching shall not be done during windy weather.
5. The mulch shall be hand or machine spread to form a continuous blanket over the seed bed, approximately 2 inches uniform thickness at loose measurement. Excessive amounts or bunching of mulch will not be permitted.
  - a. Mulch shall be anchored by an acceptable method.
  - b. Unless otherwise specified, mulch shall be left in place and allowed to disintegrate.

- c. Any anchorage or mulch that has not disintegrated at time of first mowing, shall be removed. Anchors may be removed or driven flush with ground surface.
- 6. Seeded areas shall be watered as often as required to obtain germination and to obtain and maintain a satisfactory sod growth. Watering shall be in such a manner as to prevent washing out of seed. Any washout or damage which occurs shall be regraded and reseeded until a good sod is established.
- 7. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed and mulch. The CONTRACTOR must submit all data regarding materials and application rates to the ENGINEER for review.
- 8. The CONTRACTOR shall maintain the newly seeded areas, including regrading, reseeding, watering and mowing, in good condition, until the development of an established cover.

L. Cultivated Area Replacement

- 1. Areas of cultivated lands shall be graded to a depth to receive topsoil of not less than the depth of the topsoil before being disturbed. All debris and inorganic material shall be removed prior to placing of the topsoil.
- 2. After the topsoil has been placed and graded, the entire area disturbed during construction shall be cultivated to a minimum depth of 12 inches with normal farm equipment.
  - a. Any debris or inorganic materials appearing shall be removed.
  - b. The removal of stones shall be governed by the adjacent undisturbed cultivated area.
- 3. Grass areas shall be re-seeded using a mixture equal to that of the area before being disturbed, unless otherwise specified.

M. Other Types of Restoration

- 1. Shrubs and landscape items damaged or destroyed as a result of the construction operations shall be replaced in like species and size.
  - a. All planting and care thereof shall meet the standards of the American Association of Nurserymen.
- 2. Water courses shall be reshaped to the original grade and cross-section and all debris removed. Where required to prevent erosion, the bottom and sides of the water course shall be protected.
- 3. Culverts destroyed or removed as a result of the construction operations shall be replaced in like size and material and shall be replaced at the original location and grade. When there is minor damage to a culvert and with the consent of the ENGINEER, a repair may be undertaken, if satisfactory results can be obtained.
- 4. Should brick pavements be encountered in the work, the restoration shall be as set forth in the General Requirements or as directed.
- 5. Items removed for construction such as mailboxes, signposts, reflector markers, and the like shall be replaced in as good or better condition than existing. Items damaged by the CONTRACTOR shall be replaced at his

expense. Privately owned items, such as mailboxes, shall be reinstalled to the satisfaction of the OWNER and ENGINEER.

N. Lawn Maintenance

1. All lawn areas shall be mowed by the CONTRACTOR before the new grass reaches a height of 4 inches.
  - a. Following the establishment of a good stand of grass and the first mowing, the CONTRACTOR'S obligation shall end except for the repair of settlement or damage
2. Any lawn area which does not develop an established cover shall be re-seeded and maintained at the CONTRACTOR'S expense until an established cover is present.

O. Tree Plantings

1. Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, as required, to minimize possibility of damage to underground utilities. Maintain grade stakes until removal is mutually agreed upon by all parties concerned.
2. Trees replaced by the CONTRACTOR will be of the same species, and will be a minimum of 6 feet high and 2 inches in trunk diameter. CONTRACTOR must fertilize and water tree appropriately after planting and will guarantee tree for a period of one year. All issues regarding tree planting including type, size, and final location must be approved by the ENGINEER prior to payment.

END OF SECTION

## SECTION 13000

### POTABLE WATER GLASS FUSED TO STEEL BOLTED STORAGE TANK

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- 1.1.1 Under this section the manufacturers authorized tank dealer (MATD) shall furnish all required labor, materials and equipment for providing and erecting a Glass-Fused-to-Steel Bolted Water Storage Tank(s) constructed of factory prefabricated glass-coated, bolt-together steel panels.
- 1.1.2 Each tank structure shall include a foundation, floor, free span dome and other accessory components as shown on the contract drawings and described herein. Note that painted, powder coat, stainless steel or galvanized bolt-together tanks are not acceptable.
- 1.1.3 All required tank materials and principal appurtenances shall be supplied by the tank manufacturer. Tank structures and appurtenances shall be new and not previously used.
- 1.1.4 A site and project specific foundation designed by the tank manufacturer with the applicable state PE stamp must be provided. No third party designs will be allowed. The tank manufacturer shall be solely responsible for the tank structural steel and foundation design.
- 1.1.5 Tanks shall be designed, manufactured and glass coated by a tank manufacturer specializing in the production of glass-coated, bolt-together steel tank systems.

##### 1.2 REFERENCES

- 1.2.1 Comply with the latest revision of the following codes, standards and specifications, except where more stringent requirements have been specified herein:
  - a. American Society for Testing and Materials (ASTM)
  - b. American Water Works (AWWA)
    - i. Tank steel panel materials, design, fabrication and erection shall comply with AWWA D103-09 and addendum D103a-14 for bolted steel tanks, unless specified otherwise herein.
  - c. American National Standards Institute (ANSI)
  - d. National Sanitation Foundation (NSF)
    - i. All material furnished by the tank manufacturer (which is in contact with the stored water), including vitreous glass-coated steel panels, joint sealant, encapsulated bolt heads, etc., shall be certified and listed by the National Sanitation Foundation (NSF) to meet NSF Additive Standard No. 61. Tank as a complete system needs to be certified, certification of a coating type alone will not be sufficient to meet this requirement.
  - e. NACE International (NACE)
  - f. Occupational Safety and Health Administration (OSHA)
  - g. Factory Mutual (FM)
    - i. Certification of annual review of quality control procedures of the manufacturing plant by FM is required upon request.
  - h. American Welding Society (AWS)
  - i. International Organization for Standardization (ISO)
    - i. The tank manufacturer's quality assurance program shall be certified to

comply with ISO 9001 standards.

- j. International Building Codes (IBC)
  - i. Tanks will be designed such that Seismic, Wind and Roof designs conform to the current state and local standards.

### 1.3 SUBMITTALS

- 1.3.1 Before executing any work in this section, the tank manufacturer shall submit for documentation, job specific structural calculations for tank and foundation, general arrangement drawings and specifications for the tank structure, foundation, joint sealant and all appurtenances. There shall be no deviation from the drawings and specifications, except upon written order from the engineer. Submittal documentation for the tank and foundation shall be sealed by the tank manufacturers Professional Engineer licensed and registered in the applicable state.
- 1.3.2 Product Data “catalog cuts” and spec sheets provided shall be marked to specifically indicate the equipment and materials proposed for this project. Indicate selections with arrows, and cross out irrelevant data.
- 1.3.3 NSF 61 certification of tank system and individual components (tank, sealant, anodes, bolts) shall be provided with submittals.
- 1.3.4 Submittals shall include certification that each applicable Section of AWWA D103-09 and addendum D103a-14 is met. Any exceptions taken shall be noted with full explanation given for the deviation. Provide a copy of this specification with a check mark next to each item where the proposed equipment does not adhere to the specification, provide information on the exception and how the proposed equipment would be brought into adherence with the item required.
- 1.3.5 All engineering costs which cause changes in design from the plans and specifications are to be borne entirely and unconditionally by the General Contractor. Approval by the Engineer of the shop drawings submitted by the General Contractor shall in no way relieve the General Contractor of full responsibility for the accuracy and completeness of the design and of the shop drawings.
- 1.3.6 Submit documentation certifying tank design and manufacture in the United States.
- 1.3.7 Copy of Builder Certification Program sponsored by the tank manufacturer certifying factory training and experience of the MATD building employees.
- 1.3.8 Documented qualifications of MATD building employees including their project construction foreman shall be submitted upon request, for review. MATD foreman shall have construction experience of at least five years in bolted glass fused to steel construction of the manufacturers tank being provided and at least (3) of that manufacturers specific glass fused to steel tank projects that are fully complete. Construction experience shall be for tanks of similar size and climate as to the one specified herein. Owner reserves the right to reject without penalty proposed foreman that does not meet the prior experience requirements.
- 1.3.9 The tank manufacturer shall provide a standard Operation and Maintenance Manual upon approval of the drawings and completion of the tank installation.

### 1.4 QUALITY ASSURANCE

- 1.4.1 Qualifications
  - a. Tank manufacturers Professional Engineer experienced, licensed and registered in the applicable state is responsible to sign and seal documentation for tank

manufacturers tank and foundation design. Evidence of professional liability insurance shall be provided (\$1,000,000) policy.

- b. The tank manufacturer shall be a specialist in the design and fabrication with a minimum of 15 years documented glass fused to steel tank manufacturing experience in the United States of projects in similar climates, sizes and applications. The tank manufacturer shall employ a staff of full time design engineers, and shall own and operate its steel fabrication and glass coating facilities.
- c. The MATD shall have built, on its own, at least 15 of the specific manufacturers glass fused to steel tanks designed to AWWA D103 and being provided that are equal or greater in size than the specified tank, operating satisfactorily in a similar application within the United States for a minimum of (10) ten years. The MATD shall provide with bid, the project name, location, application, size, capacity, contact information and year of supply/operation of their erected tank.
- d. Manufacturers and MATD lacking the experience requirements listed in this section or elsewhere in the contract documents will NOT be considered without prior approval. Strict adherence to the standards of design, fabrication, erection, product quality, and long term performance established in this specification will be required by the engineer and owner.
- e. Builders lacking the experience requirement will not be considered unless they provide a satisfactory 5 year 100% performance bond in lieu of evidence of experience and long term operation.

#### 1.4.2 Source Limitations

- a. Tank and dome in this Section shall be furnished and erected by a single MATD.
- b. Tank and dome in this Section shall be manufactured and fabricated by a single source with all fabrication and engineering design done in house.

### 1.5 PACKAGING, DELIVERY AND HANDLING

- 1.5.1 All sheets that pass factory inspection and quality control checks shall be protected from damage prior to packaging for shipment.
- 1.5.2 Heavy paper or plastic foam sheets shall be placed between each panel to eliminate sheet-to-sheet abrasion during shipment.
- 1.5.3 Individual stacks of panels will be wrapped in heavy waterproof cover and steel banded to special wood pallets built to the roll-radius of the tank panels. Shipment from the factory shall be by truck, exclusively hauling the tank components. This procedure minimizes contact or movement of finished panels during shipment.

### 1.6 WARRANTY

- 1.6.1 If within a period of one (1) year from date of completion (or 14 months after delivery), the tank structure or any part thereof shall prove to be defective in material or workmanship upon examination by the manufacturer, the manufacturer will supply a replacement part, will repair, or allow a credit for same.
- 1.6.2 The warranty shall be further extended with the use of a Manufacturer supplied Cathodic Protection system as follows: the glass coated product zone surfaces, that portion of the tank interior below the normal high elevation of the contained liquid will not corrode under normal and proper use, maintenance and operation during the period expiring on the

earlier of (i) 60 months after liquid is first introduced into the tank or (ii) 62 months after shipment from the factory.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURER

- 2.1.1 The tank will be supplied must be pre-approved.
- 2.1.2 All pre-approval requests must be made at least 10 business days prior to the specified bid date or they will not be considered. Only bids from tank manufacturers and MATD who have successfully prequalified will be considered. Bidders will be notified via addendum allowing or disallowing the pre-approval request. If bidder fails to pre-qualify and provide the documentation deemed necessary by the engineer to evaluate proposed alternate equipment, the proposed tank will be rejected.
- 2.1.3 The engineer is the sole authority for determining conformance to the specifications and whether to pre-quality a proposed supplier. Under no circumstances will they be required to prove that an alternate product is not equal to the specified equipment. The engineer's decision or judgment on these matters will be final, conclusive and binding.
- 2.1.4 Naming of a manufacturer does not relieve them from complying with the performance features, the salient features and any made in the USA requirements of the contract documents. The contract documents represent the minimum acceptable standards that will be allowed.
- 2.1.5 The Engineer's selection of factory applied glass-fused-to-steel bolt together tank construction for this project has been predicated upon specific criteria, construction methods, and an optimum coating resistance to internal and external tank corrosion. Deviations from the specified design, construction or coating details will not be permitted.
- 2.1.6 The Engineer/owner reserves the right to evaluate all bids based on long term, 40-50 year operation, coating and maintenance costs. Values to be used in this evaluation will be at the discretion of the Engineer to determine which tank best fits the owners needs. The Engineer will add such costs, dependent upon the type of tank offered, to the bidder's price to determine the effective low bid for purposes of making the award.
- 2.1.7 An authorized dealer of the tank manufacturer shall provide and install the tank. Sub contracting of the tank erection by the MATD shall not be permitted. Building crews shall comply with the tank manufacturer's requirements for building practices and equipment used on the job.
- 2.1.8 In order to assure uniform quality and ease of maintenance, it is the intent of these specifications that equipment under this section, tank, foundation design, cathodic protection system and dome shall be supplied by a single manufacturer and that the equipment manufacturer and MATD assume the responsibility for proper installation and functioning of equipment.

### 2.2 DESIGN REQUIREMENTS

- 2.2.1 Tank structures shall be vertical, cylindrical, flat bottom, glass coated, bolt together steel construction. Epoxy, powder coated, galvanized or stainless steel are not considered equal and will not be considered.
- 2.2.2 Tank shall be in 100% adherence to US, State and local codes, standards and requirements. No foreign designs or codes will be accepted.
- 2.2.3 The factory coated glass-fused-to-steel bolt together tank shall have a nominal diameter of 34 feet, with a nominal sidewall height (to roof eave) of 42 feet.

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FUSED TO STEEL BOLTED STORAGE TANK

- 2.2.4 Tank capacity shall be 250,000 minimum gallons (useable, U.S. gallons). Design freeboard shall be 12 inches minimum.
- 2.2.5 Finished floor elevation shall be set at Elev. 928.3
- 2.2.6 Loads to be considered in the tank and roof design shall include basic live, seismic and snow loads.
- 2.2.7 Specific Gravity - "Minimum design shall be 1.0"
- 2.2.8 Net allowable soil bearing capacity 6000 PSF (per Geotechnical report)
- 2.2.9 Seismic Design
  - a. Design per IBC 2015 as modified by NYSBC 2017 Uniform Code Supplement]. EN 15282 is not considered equal and will not be accepted.
  - b. Map Spectral Response
    - i.  $S_s$  0.171
    - ii.  $S_1$  0.055
  - c. Importance Factor based on Category IV ( $I_E$ )
  - d. Site Class D
  - e. Long Period Transition Period 6 ( $T_L$ )
- 2.2.10 Snow Load
  - a. Ground Snow Load 50 PSF.
  - b. Importance Factor [1.2] ( $I_s$ )
  - c. Thermal Factor [1.2] ( $C_t$ )
  - d. Exposure Factor [1.0] ( $C_e$ )
- 2.2.11 Wind Load (AWWA D103-09)
  - a. Basic Wind Speed 100 mph
  - b. Importance Factor 1.15 ( $I_W$ )
  - c. Exposure Category [C]
- 2.2.12 Frost Depth (48 inches)
- 2.2.13 Load cases (include the self weight of the structure in all of the following load combinations) shall be analyzed to determine the controlling stresses, as follows:
  - a. Normal operating conditions (full tank) with a full snow load.
  - b. Empty tank, no snow.
  - c. Wind, or earthquake, on empty tank, full snow.
  - d. Wind, or earthquake, on empty tank, snow on leeward side of dome.
  - e. Wind, or earthquake, on empty tank, no snow
- 2.2.14 Concrete Floor
  - a. The tank floor shall be constructed of reinforced concrete as shown on contract drawings. If fill is used, the fill under the floor/footing shall be compacted and tested to a minimum of 95% of proctor.
  - b. The floor design shall include an embedded glass-coated starter sheet ring per the manufacturers design and in accordance with AWWA D103. The floor and foundation are an integral part of the tank assembly: therefore the tank foundation and floor slab shall be constructed by the MATD.

- a. Glass Fused to Steel Knuckle Roof The tank roof shall be furnished and constructed by CST Storage, the tank manufacturer, and be constructed of glass coated steel panels as shown on contract drawings. Roofs shall be clear span and self-supporting. Center post supports are not permitted.
- b. Roof live loads and dead loads shall be carried by tank sidewalls, without additional support. A roof hatch, with a hinged gasket cover and locking hasp, shall be provided near the outside tank ladder.
- c. Roof shall be fabricated of radially sectioned, glass coated bolt together steel panels. Roof panel fabrication shall be similar to that for sidewall panels, employing the same sealing and bolting techniques to ensure a weather tight assembly.
- d. Roof shall be a rolled knuckle design, with no rolled angle connection between sidewall and panels.
- e. The roof manway opening shall have a clear dimension of at least 24” in one direction and 18” in the other direction. The opening shall have a curb of at least 4” in height, and the cover shall have a downward overlap of at least 2”, or a gasket weather-tight cover in lieu of the 4” curb and 2” overlap. Roof exterior color shall standardly be Cobalt Blue.
- f. The walkway and handrail, if supplied with the roof, shall be constructed of Hot Dipped Galvanized steel.
- a. Aluminum Geodesic Dome Roof The tank roof shall be furnished and constructed by CST Storage, the tank manufacturer. Roofs shall be designed to AWWA D108 and ADM – 2010 and be constructed of triangular aluminum panels as shown on contract drawings. Roofs shall be clear span and self-supporting. Center post supports are not permitted. Materials shall be AA6005A-T1, AA6061-T6 or AA3003-H16. All metal components of the aluminum dome structure shall be aluminum or 300 series stainless steel. Alternate aluminum dome manufacturers wishing to be considered must pre-qualify with the engineer in order to register as an acceptable alternate.
- b. Connection forces shall be transferred through gusset plates connected to the top and bottom flanges of the beam struts. The connections shall be designed as moment connections; a minimum of four bolts shall be used to connect the gusset plate to each strut flange. The structural analysis shall be performed using non-linear, second order, stiffness analysis models in accordance with ADM 2010 Chapter C. Stability shall be provided for the structure as a whole and for each of its components. The available strengths of members and connections determined in accordance with Section C.3 shall equal or exceed the required strengths determined in accordance with Section C.2
- c. No galvanized, aluminized, painted, or plated steel shall be used anywhere in the dome above the mounting bracket base plates. Dissimilar materials in the supporting structure shall be isolated from the aluminum dome by means of a composite elastomeric gasket. Designs that incorporate raised battens, overlapping panels and/or designs that incorporate fasteners which penetrate panels and attach to structural members are expressly prohibited.
- d. Roof live loads and dead loads shall be carried by tank sidewalls, without additional support. A roof hatch, with a hinged gasketed cover and locking hasp, shall be provided near the outside tank ladder.
- e. Roofs are aluminum in color and shall be constructed of non-corrugated, triangular geodesic aluminum panels, which are sealed and firmly clamped in

an interlocking manner within a fully triangulated aluminum space truss system of wide flange extrusions, thus forming a dome structure. Fabric type flashing is not allowed.

- f. The dome shall be self supporting from the periphery structure with horizontal thrust contained by an integral tension ring. The entire structure shall be designed as a watertight system under all design loads and temperature conditions. The design shall include sealant to be completely encapsulated by applying it to the gusset covers inner circumference, beneath the gusset covers top closure plates.
- g. The top surface of the batten bars must be completely flush with the triangular panel surfaces so that no ponding of water occurs at cover joints. Raised batten bars, overlapping panels, and/or panel attachment fasteners that penetrate panels are expressly prohibited.
- h. The walkway and handrail, if supplied with the roof, shall be constructed of aluminum.
- i. The roof manway opening shall be at least 30" square. The opening shall have a curb of at least 4" in height, and the cover shall have a downward overlap of at least 2". The manway shall be aluminum.
- j. Dome Materials
  - i. Triangulated dome frame struts: 6061-T6 aluminum or 6005A-T61
  - ii. Structural frame gussets: 6061-T6 aluminum, 0.3125 inch nominal thickness.
  - iii. Triangular closure panels: .050 inch nominal thickness, 3003-H16 aluminum Sheet.
  - iv. Perimeter tension/compression ring: 6061-T6 aluminum or 6005A-T61T61
  - v. Fasteners: Fasteners shall be designed with a factor of safety of 2.34 on ultimate strength and 1.65 on yield strength. Threaded fasteners shall be 304 stainless steel. Lockbolts shall be 7075-T73 aluminum, 304 or 305 stainless steel. Screws shall be aluminum or 300 series stainless steel.
  - vi. Sealant: Silicone by Pecora, General Electric Silpruf or equal and shall be resistant to ozone and UV. Sealer shall conform to Federal Specification TT-S-00230
  - vii. Gaskets: Silicone, General Electric SE-44/88 or equal. Gaskets shall conform to ZZ-R-765, Class 2, Grade 50 or equal. Neoprene may be substituted but only if shielded from UV light. Gaskets must be 1/8" thickness minimum.
  - viii. Anchor Fasteners: Series 300 stainless steel.
  - ix. Dormers, doors, and hatches: 6061-T6, 5086-H34, 5052-H36 or 5052-H32 aluminum, 0.090inch nominal thickness.
  - x. The tank supplier shall perform all manufacturing work described herein with mechanics skilled and experienced in the fabrication of aluminum dome roof structures. Fabrication shall be done in an ISO 9001 certified facility.
  - xi. All field work shall be completed by the MATD qualified erection crew. Sub-contracting of the roof manufacturing or erection is not allowed.
  - xii. Field re-fabrication of structural components or panels will not be accepted. Forcing of the structure to achieve fit-up during construction is expressly forbidden and not acceptable. Any indication of improper

fit-up of parts shall be immediately reported to the fabricator.

- i. All sealant joints shall be tooled slightly concave after sealant is installed. Care shall be taken to keep sealant confined to the joint in a neat manner. Any sealant applied outside of the joint shall be removed so that the panels will be free from misplaced sealant. All gasket materials shall be continuous, splices will not be allowed.

## 2.3 MANUFACTURING PROCESS

### 2.3.1 Glass Coating

- a. The glass coating system shall be in full accordance with the requirements of AWWA D103, latest revision. Coating frits shall be individually tested in accordance with PE1 Test T-2. (Citric acid at room temperature). The coating process shall employ equipment that evenly coats the sheet surface and all four exposed sheet edges

### 2.3.2 Surface Preparation

- a. Following the de-coiling and shearing process, sheets shall be steel grit blasted on both sides to the equivalent of SSPC PC-10 (near white metal blast cleaning). Sandblasting and chemical pickling of steel sheets is not acceptable. The surface anchor pattern shall be not be less than 1.0 mils. (.0001inches). Sheets shall be evenly oiled on both sides to protect them from corrosion during fabrication.

### 2.3.3 Cleaning

- a. After fabrication and prior to application of the coating system, all sheets shall be thoroughly cleaned by Coral COR Clene 16 caustic wash with 140°F hot water, then a two stage rinse followed immediately by hot air drying. Inspection of the sheets shall be made for traces of foreign matter, soil particles, grease or rust. Any such sheets shall be re-cleaned or grit-blasted to an acceptable level of quality.

### 2.3.4 Coating Application

- a. Manufacturer shall maintain and use supplementary directional spray nozzles using an automated machine process to consistently coat the sheet edge profiles per PE 101 standard. The sheet edges shall be coated with the same vitreous enamel glass coating as the panel surface.
- b. All sidewall sheets shall receive one coat of a catalytic nickel oxide glass pre-coat to both sides, followed by air-drying.
- c. A second coat of milled cobalt blue glass shall be made to both sides of the sheets and then dried.
- d. A third cover coat of milled titanium dioxide white glass shall then be applied to the inside of the sheet and the sheet edges. This milled glass shall be formulated with 18% to 22% titanium dioxide to produce a finish interior surface with optimum toughness and resistance to conditions normally found in potable water storage tanks. This specific coating shall be Aquastore Vitrium. Any alternate three coat system must be submitted for approval and acceptance prior to bid.
- e. The sheets shall then be fired at a minimum temperature of 1500 °F in strict accordance with ISO 9001 quality process control procedures, including firing time, furnace humidity, temperature control, etc.

- f. The 4 continuous sheet edge enamel thickness shall be 5 mils.
- g. The dry film interior coating thickness shall be 10-18 mils min. The dry film exterior coating thickness shall be 7-15 mils min. This is a three coating process.
- h. The finished tank inside sidewall glass coating shall be white. Cobalt Blue finished interior color will not be accepted. The standard tank sidewall finished outside color shall be Cobalt Blue. (Munsell standard 7.5 PB 2/4.) Finished outside colors shall not vary noticeably among tank panels. Off color panels will be rejected; replacement panels of matching color shall be supplied by the tank manufacturer.

### 2.3.5 Sheet Edge Coating

- a. Prior to sheet glassing all four (4) exposed rectangular continuous sheet edges, including starter sheets, for each specific sheet radii shall be mechanically rounded in profile resulting in an optimized radius and adhere to The Porcelain Enameling Institute's Technical Manual PEI-101.
- b. The sheet surface next to the edge must remain flat, post process, to prevent 'bulging' to less than 0.030 inches (0.79mm) relative to the flat, while being rolled. All (4) exposed sheet edges will then be directionally sprayed by nozzles, using an automated machine process, and coated with the same vitreous enamel glass coating as the sheet surface.
- c. Sheet edge encapsulation will have an enamel coating minimum DFT (dry film thickness) of 5 mils (127 microns). Coating adhesion shall be tested in accordance with ISO 28765 Class 2 or better. Sheet face and sheet edge must meet the same glass quality test. Rounded sheet edge encapsulation will have zero exposed uncoated steel.
- d. The process shall be equal in all respects to Edge Coat II by CST Storage. Sealer or glass overspray as edge coating shall not be an acceptable alternative and nozzle spray must be directionally oriented toward the edges to ensure consistency of coverage. The coating shall have a tensile strength of 1500 psi.

## 2.4 SOURCE QUALITY CONTROL

- 2.4.1 The manufacturers quality system shall be ISO 9001 certified and refer to ISO (International Organization of Standardization) for the following testing and procedures.
- 2.4.2 Coated sheets shall be inspected for mil thickness using a calibrated magnetic induction type electronic dry film thickness gage with a valid calibration record. Test frequency shall be a minimum of every gage change and/or a minimum of every half hour.
- 2.4.3 Coated sheets shall be measured for color using an electronic colorimeter with a valid calibration record. Test frequency shall be a minimum of every gage change and/or a minimum of every half hour. The color must fall within the specified tolerance or it shall be rejected.
- 2.4.4 An electrical leak detection test shall be performed on the interior and exterior surface of each panel after fabrication. Inside wet sheet surfaces shall be inspected using a low voltage wet sponge holiday tester in accordance with ASTM D5162-91 Method A. The tester shall be used at a voltage of 67.5 volts (+/- 10 %) and set so the alarm is sounded if the electrical resistance of the glass coating falls below 125,000. The tester shall have a valid calibration record. The testing solution used to wet the sponge shall contain a low suds wetting agent added at a ratio of not more than ½ fluid oz. per gallon of water. Every sheet shall be 100% tested for holidays and any sheet with a discontinuity shall be rejected.

- 2.4.5 A dry volt test using a minimum of 1100 volts may be used in addition to the low voltage wet sponge test. Frequency of the test shall be every sheet. Any sheet registering a discontinuity on the interior surface shall be rejected
- 2.4.6 Adherence of the glass coating to the tank steel shall be tested in accordance with ISO standards. Any sheet that has poor adherence will be rejected. Coating adhesion shall be tested in accordance with ISO 28765 Class 2 or better. Sheet face and sheet edge must meet the same glass quality test.
- 2.4.7 Glass coating shall be tested for fishscale by placing the full size production sheets in an oven 400°F for one hour. The sheets will then be examined for signs of fishscale. Any sheet exhibiting fishscale shall be rejected and all sheets from that gage lot will be similarly tested. The minimum frequency of testing for this shall be five times per month.
- 2.4.8 The tank manufacturer shall provide documentation upon request, of the above tests including mill reports and traceable documents to demonstrate the source of steel used in the manufacture of this project specific tank

## 2.5 MATERIALS

### 2.5.1 Plates and Sheets

- a. Plates and sheets used in the construction of the tank shell, floor, or roof shall comply with the minimum standards of AWWA D103, latest edition and AWWA D103a-14 addendum. All steel shall be smelted and produced in the United States of America.
- b. The annealing effect created from the glass coated firing process shall be considered in determining ultimate steel strength and yield strength of the steel used for calculations detailed in AWWA D103, Equations 5-4 and 5-5 and in accordance with the AWWA D103a-14 Addenda such that  $F_u$  and  $F_y$  shall be reduced by a factor of 0.7 from the published steel values. In no event shall a yield strength greater than 50,000 psi be utilized for such calculations detailed in AWWA D103 unless the tank manufacturer can substantiate the use of higher values as a result of a documented testing program.
- c. The tank manufacturer shall have and provide for the Engineer's review, upon request, published ultimate tensile and yield strength values for the proposed steel. In addition, per AWWA D103a-14 the tank manufacturer shall have test results for the most recent two (2) year period to substantiate the use of  $F_u$  and  $F_y$  values used in the tank manufacturer's design calculations if the values exceed 70 percent of the published values.
- d. Design requirements for mild strength steel shall be ASTM A-1011 Grade 30 with a maximum allowable tensile stress of 12,135 psi. High strength steel shall be ASTM A-1011 Grade 50 with a maximum allowable tensile stress of 21,167 psi.
- e. When multiple vertical bolt line sheets and plates of ASTM A-1011 Grade 50 are used, the effective net section area shall not be taken as greater than 85% of the gross area. Multiple vertical bolt line sheets and plates shall be manufactured such that holes are staggered in the vertical bolt lines and that no two adjoining holes are in-line horizontally, except at the center of the sheet or plate
- f. When Rolled Structural Shapes are used, the material shall conform to minimum standards of ASTM A36 or ASTM A992.
- g. Minimum acceptable sheet thicknesses:



- g. All lap joint bolts shall include a minimum of four (4) splines, .002 inches minimum on the underside of the bolt head at the shank in order to resist rotation during torque wrench application.

#### 2.5.4 Sealants

- a. The lap joint sealant shall be a one component, moisture cured, polyurethane compound. The sealant shall be manufactured by a United States supplier as well as be suitable for contact with potable water and shall be certified to meet ANSI/NSF Additives Standard No. 61.
- b. The sealant shall be used to seal lap joints, bolt connections and for sheet edge fillets. The sealant shall be CST Storage, Manus Bond 98 Sealer . The sealant should have a curing rate at 73°F and 50% RH and be tack free in 6 to 8 hours. Final cure time should be 10 to 12 days. Sealer shall be resistant up to 100-ppm chlorine concentration during disinfection. Neoprene gaskets and tape type sealer shall not be used.
- c. The sealant shall cure to a rubber like consistency, have excellent adhesion to the glass coating, low shrinkage and be suitable for interior and exterior use.
- d. Due to poor compatibility with chlorine, the sealant Sika 1A shall not be used on potable water storage tanks.

#### 2.5.5 Roof Vent

- a. A properly sized aluminum vent assembly in accordance with AWWA D103 shall be furnished and installed above the maximum water level. A curbed opening shall be provided at the apex of the dome. At maximum possible rate of water fill or withdrawal, the resulting interior pressure or vacuum will not exceed 0.5-inch water column.
- b. Protection against birds and protection against ice plugging shall be provided. An insect screen shall be provided and designed to open should the screen become plugged by ice formation.
- c. The vent shall be constructed of aluminum such that the hood can be unbolted and used as a secondary roof access.

#### 2.5.6 Pipe Connections

- a. Where pipe connections are shown to pass through tank panels, they shall be field located, saw cut, (acetylene torch cutting or welding is not permitted), and utilize an interior and exterior flange assembly. Tank shell reinforcing shall comply with AWWA D103 latest edition. CST Storage Manus Sealer shall be applied on any cut panel edges or bolt connections.
- b. Overflow piping shall be irrigation grade seamless aluminum tubing. Twenty four mesh non corrodible screen shall be installed within the pipe.

#### 2.5.7 Ladder Assemblies

- a. An outside tank ladder shall be furnished and installed as shown on the contract drawings. Ladders shall be aluminum and utilize grooved, skid-resistant rungs.
- b. Safety cage and step-off platforms shall be fabricated of galvanized steel. Ladders shall be equipped with a hinged lockable entry device.

#### 2.5.8 Access Doors

- a. Each tank shall be provided with one (1) 24-inch diameter bottom access door as shown on contract drawings per AWWA D103. The manhole opening shall

be a minimum of 24 inches in diameter. The access door and tank shell reinforcing shall comply with AWWA D103 latest edition.

- b. A davit to hold the cover plate is required.

#### 2.5.9 Identification Plate

- a. A manufacturer's nameplate shall list the tank serial number, tank diameter and height, maximum design capacity, intended storage use, and date of installation. The nameplate shall be affixed to the tank exterior sidewall at a location approximately 5' from grade elevation in a position of unobstructed view.

#### 2.5.10 Cathodic Protection System

- a. The tank manufacturer will provide a passive cathodic protection system designed specifically for the project tank, consisting of sacrificial anodes which provide protection for the portion of the structure immersed in liquid. The anodes are attached to the floor, and bolted through existing shell sheet bolt holes. Lead wires and buss bars are used to ensure continuity between anodes and all structure shell sheets.
- b. The cathodic protection system shall be designed by a licensed professional engineer employed by the tank manufacturer. The system shall be designed to protect both the tank and the foundation rebar in concrete floors.
- c. The resistivity of the water to be stored in the tank will determine the type and number of anodes.

#### 2.5.11 Plastic Encapsulated Cap

- a. High density ASTM D-698 polyethylene co-polymer caps and sealant shall be used to cover the bolts, nuts and washers exposed on the exterior sidewall of the tank.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

3.1.1 Employees of the MATD shall be experienced in the construction of the specified glass fused to steel tank and should be trained in a factory training program receiving builder certification by the tank manufacturer, and shall be employed full time by the authorized dealer.

3.1.2 Supervisory personnel of the erection crew shall identify themselves to responsible personnel of the Engineer or Inspector upon initially entering the job site. Only trained and certified personnel will be allowed on site.

#### 3.1.3 Tank Foundation

- a. The tank foundation shall be built in accordance with the contract drawings and/or approved shop drawings. Foundation shall be designed by the manufacturers licensed engineer and built by the MATD to safely sustain the structure and its live loads. Floor rebar shall be epoxy coated.

#### 3.1.4 Concrete Floor +-

- a. Only embedded starter ring designs are acceptable for concrete floors. Slot mount base foundations, rebate base, and flat base designs which do not include an embedded base ring will not be allowed.

- b. Leveling of the starter ring shall be required and the maximum differential elevation with the ring shall not exceed 1/8 inch, nor exceed 1/16 inch within any 10 feet of circumference.
- c. In no case shall the backfill elevation vary more than one (1) foot around the periphery of the tank shell.
- d. A leveling plate assembly, consisting of two anchor rods and a slotted plate shall be used to secure the starter ring, prior to encasement in concrete. Installation of the starter ring on concrete blocks or bricks, using shims for adjustment, is not permitted.
- e. Place one butyl rubber elastomeric waterstop seal on the inside surface of the starter ring below the concrete floor line. Place one bentonite impregnated water seal below the butyl rubber seal. Install materials in accordance with CST Storage instructions.
- f. Tank footing design shall be based on the soil bearing capacity given by the engineer, as determined by geotechnical analysis performed by a licensed soils engineer. Copies of the soil report will be provided to the bidder prior to bid date by the Owner or Engineer.
- g. Concrete floors may be poured monolithically for all tank diameters. For larger structures, floors shall be quadrant poured. Concentric ring pouring shall not be allowed. Floors shall be designed ACI 350.

#### 3.1.5 Tank Structure

- a. Field erection of the glass-coated, bolted-steel structures and components shall be in strict accordance with the procedures established by the manufacturer and performed by MATD who is regularly engaged in erection of the manufacturers glass fused to steel tanks, using experienced factory-trained certified erectors fully employed by the Dealer.
- b. Only specialized erection jacks and building equipment developed and supplied by the tank manufacturer shall be used to erect the tanks. Every sheet shall be 100% tested for holidays.
- c. Particular care shall be taken in handling and bolting of the glass-coated steel tank panels, appurtenances and members to avoid abrasion of the coating system. Prior to liquid test, all surface areas shall be visually inspected. Chips or scrapes in the glass coating shall be repaired per the tank manufacturer's recommended procedure.
- d. An electrical coating leak test shall be performed during erection using a wet sponge nine-volt leak detection device. All electrical leak points found on the inside surface shall be repaired in accordance with manufacturers published touch-up procedures.
- e. No backfill is to be placed against the tank sidewall without prior written approval of the tank manufacturer. Any backfill allowed shall be placed strictly in accordance with the instructions of the tank manufacturer.

### 3.2 FIELD TESTING

- 3.2.1 Following completion of erection and cleaning of the tank, the structure shall be tested for liquid tightness by filling to its overflow elevation.
- 3.2.2 Any leaks disclosed by this test shall be corrected by the MATD in accordance with the manufacturer's recommendations.

3.2.3 Water required for testing following completion of tank erection will be furnished by the owner. Disposal of water, if required, following testing is by the Owner. Labor and equipment necessary for hydrostatic tank testing shall be included in the contract price of the tank.

### 3.3 DISINFECTION

3.3.1 The tank structure shall be disinfected at the time of testing by chlorination in accordance with AWWA C652-11, or latest revision, "Disinfection of Water Storage Facilities".

3.3.2 Acceptable method of disinfection: Chlorination Method 1, 2 or 3 per AWWA C652-11.

3.3.3 Acceptable form of chlorine for disinfection: Sodium Hypochlorite, as specified in AWWA C652-11.

3.3.4 Disinfection shall not take place until the tank sealant is fully cured (10 to 12 days at 73°F and 50% relative humidity or equivalent).

### 3.4 FIRST YEAR INSPECTION

3.4.1 On or near the (1) year anniversary date of initial tank use (but not more than (14) months from date of delivery of tank materials to job site), the MATD shall make a visual inspection of the tank interior coating and appurtenances, tank exterior coating and appurtenances, and the immediate area surrounding the tank for evidence of leakage. A written summary of the inspection report will be filed with the tank owner and the tank manufacturer.

3.4.2 Water required for the inspection process will be furnished and disposed of by the Owner.

END OF SECTION

Revised 3-01-2018

## SECTION 15051

### BURIED PIPING INSTALLATION

#### PART 1 – GENERAL

##### 1.01 DESCRIPTION

###### A. Work Specified

The work specified shall include all labor, material, equipment, services and incidentals necessary to furnish and install watermain, specials and fittings, install fire hydrants and to perform interconnections and abandonments as shown on the plans and specified herein.

###### B. Related Work Specified Elsewhere

1. Section 02351 - Excavation, Backfill, and Trenching
2. Section 15106 – Ductile Iron Pipe and Fittings
3. Section 15110 - Valves and Appurtenances
4. Section 15120 - Piping Specialties and Accessories
5. Section 15140 - Testing and Disinfection

##### 1.02 QUALITY ASSURANCE

###### A. Reference Standards

1. AWWA Standards identified in other related sections
2. ASTM Standards identified in other related sections
3. ANSI Standards identified in other related sections
4. Occupational Safety and Health Administration (OSHA)
5. 1996 Safe Drinking Water Act
6. NSF/ANSI Standard 60 and 61, as applicable
7. All other standards itemized in related work sections

##### 1.03 SUBMITTALS

###### A. Shop Drawings

Prior to obtaining any products in relationship to this Section, the CONTRACTOR shall submit detailed shop drawings and data for review by the ENGINEER.

###### B. Materials List

The CONTRACTOR shall submit, along with shop drawings, a materials list, which shall include full information regarding all components of the watermain. Materials of construction shall be presented in the listing.

###### C. Other Submittals

1. Prior to installation of the proposed watermain, the CONTRACTOR shall furnish the required number of the manufacturer's Operation and Maintenance Manual for each item.
2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.
3. A tabulated layout schedule.
4. Detailed procedure, schedules and list of materials for interconnection sequence.
5. Furnish delivery tickets indicating the pipe manufacturer, pipe type and class, identifying that the pipe was new and from a manufacturer that has been submitted and approved.

D. Certificate

1. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.

#### 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage in accordance with the manufacturer's requirements; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the pipe, fittings and accessories. Do not drop or roll materials off trucks.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, chipped, gouged, dented, or otherwise damaged shall not be accepted.
- D. Interiors of pipe, fittings and specials shall be kept free from dirt and foreign matter.
- E. Store pipe and fittings on heavy wood blocking or platforms so they are not in contact with the ground.
- F. Pipe, fittings, and specials shall be unloaded opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

A. General

1. All products, including interior coatings, shall be suitable for use in a potable water system.
2. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.

**B. Pipe**

Materials for the piping, joints and fittings shall be as specified in other related sections or as shown in the pipe schedule or on the Contract Drawings.

1. Pipe and appurtenances shall comply with the applicable standards for its type of material.
2. All pipes, fittings, valves, hydrants, specials, and accessories must be new materials in first-class condition. Used or recycled materials shall not be allowed, regardless of condition.
3. Piping for hydrant branches shall only be Class 53 ductile iron.
4. Piping within casing pipes (except for tree bores) and beneath pavement shall be either ductile iron pipe or prestressed concrete cylinder pipe as shown and as specified.
5. Piping in non-paved areas shall be either ductile iron pipe, prestressed concrete cylinder pipe, or PVC as shown and as specified.

**C. Joints**

Type of joints shall be as specified in other related Sections or as shown in the pipe schedule or as on the Contract Drawings.

**D. Magnetic Pipe Marking Tape**

Magnetic pipe marking tape as manufactured by C. H. Hanson Products, Paul Potter Warning Tape, or approved equal shall be installed above all new watermain.

1. Tape shall be 3 inches wide consisting of two (2) exterior plies of polyethylene with an aluminum alloy foil core.
2. Tape shall be blue color and labeled: "WATER" in black letters.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

**A. General**

1. Excavation and backfilling shall be in accordance with the applicable provisions of Section 02351 - Excavation, Backfill, and Trenching.
2. Blocking will not be permitted under pipe, except where the pipe is to be laid with concrete cradle or encasement.
3. Pipe shall be installed on a layer of select material as shown on the Drawings to provide an acceptable bedding. The top of this layer shall then be considered the bottom of the trench.
4. Pipe shall not be laid on bedrock without appropriate bedding stone.

5. No pipe shall be laid upon a foundation in which frost exists; or when there is danger of the formation of ice or the penetration of frost at the bottom of the excavation.
6. Bell holes shall be dug in the bottom of the trench to allow the pipe to have a firm bedding along the entire length of the pipe.
7. Temporary watertight bulkheads shall be placed in all open ends of pipe whenever pipe laying is not actively in process. The bulkheads shall be designed to prevent the entrance of dirt, debris, or water.
8. Precautions shall be taken to prevent the flotation of pipe in the event of water entering the trench.
9. Hydrant installation shall be as specified in Section 02080 - Fire Hydrants and as specified herein.

B. Location and Grade

1. Watermain and appurtenances shall be located as shown on the Contract Drawings or as directed and as established from the control survey in accordance with the General Requirements.
2. The alignment and grades shall be determined and maintained by a method acceptable to the ENGINEER.
3. Pipe shall be installed in straight horizontal trenches. "Snaking" of pipe by bending sections horizontally shall not be allowed.

C. Subgrade

The subgrade for pipelines shall be earth or bedding as specified or directed and shall be installed in accordance with Section 02351 - Excavation, Backfill and Trenching.

D. Joints

1. Joints shall be assembled using gaskets, lubricants, heat fused and solvents as furnished by the pipe manufacturer and in accordance with the manufacturer's recommendations.
2. Joint deflection shall not exceed 50% of manufacturer's recommendations.

E. Bedding

Bedding shall be deposited and compacted in accordance with Section 02351 - Excavation, Backfill, and Trenching, and shall be as itemized below unless otherwise specified or directed.

1. For watermains:
  - a. The bedding shall be as specified in Section 02316, Select Granular Materials.
  - b. Bedding shall be deposited and tamped in 6-inch layers to the centerline of the pipe or to 6 inches above the pipe in paved or traveled areas.
  - c. Native material placed above the centerline of the pipe shall be deposited in such a manner as to not damage the pipe. Native

material shall be suitable for backfill above the centerline of the pipe provided the materials are 2 inches in size or less. Native materials shall be suitable for backfill 6 inches above the pipe in non-paved areas provided the materials are 2 to 4 inches in size, but bedding is required to 6 inches above the pipe. Native materials greater than 4 inches are unacceptable for backfill.

F. Thrust Restraints

Thrust restraints for watermains shall be accomplished by the use of both thrust blocks and mechanical restraints for sizes through 12 inches. Joints for watermains 16 inches and larger shall have thrust restraints provided by harnessed joints only. Restraints shall be in the form of retainer glands; ductile iron locking segments with spigot weldment; or anchors of the size and type specified or as required by the pressure and stability of the supporting surface.

1. Thrust restraints shall be installed at all changes in direction, changes in size, dead ends or other locations where shown or directed.
2. Valves shall be treated as a bulkhead condition and pipe joints shall be restrained on both sides of the valve.
3. Cast in place concrete used for thrust restraints shall have developed the required strength prior to testing of the watermain.
4. When approved for use by ENGINEER, tie rods and nuts for thrust restraints shall be of high tensile steel and shall have a minimum yield strength of 70,000 psi.
  - a. Tie rods and nuts installed underground shall be coated with two coats of coal tar pitch preservative coating after installation.
  - b. Oil, grease, paint, or any coating which requires drying will not be acceptable.
5. All fire hydrant branches from the mainline tee to and including valve and hydrant shall be restrained.
6. All piping installed for interconnections shall be restrained.
7. All piping installed within casing pipes shall be restrained for the full length of the pipe installed within the casing pipe.
8. All piping installed within the limits of creek crossings shall be restrained for the full length of the creek crossing limits.

G. Service Connections

1. Connections to in-service pressure watermains shall be in accordance with the applicable provisions of Section 15120, Piping Specialties and Accessories.

H. Concrete Thrust Blocks

1. Solid concrete blocks shall be used for proper blocking. Hollow concrete blocks or wooden blocking are not acceptable. Cast-in-place wet concrete mix shall be used for vertical bends and anchor collars.

- I. Magnetic Pipe Marker
  - 1. Magnetic pipe marker tape shall be placed above all new watermains as shown on the Drawings.
  - 2. Magnetic pipe marker tape shall be tied to watermain valve boxes.
  - 3. Splices, where needed, shall be made in accordance with manufacturer's recommendations.
  - 4. At completion of the project and before final payment is made, the CONTRACTOR shall test the entire length of the pipe using pipe locating equipment. Tests shall be made only in the present of the ENGINEER. Any section of tape not continuous or that is undetectable shall be removed and replaced at the CONTRACTOR'S expense.

### 3.02 CUTTING AND SPECIAL HANDLING

- A. Field cuts of pipes shall be in accordance with the manufacturer's instructions.
- B. Where a pipe requires special handling or installation it shall be in accordance with the applicable referenced standard.

### 3.03 INTERCONNECTIONS

- A. Perform interconnections as shown on the Contract Drawings and in accordance with Section 01731, Connections to Existing Facilities.

### 3.04 ABANDONMENTS

- A. Hydrants and Valves
  - 1. Removal of existing and abandoned hydrants and valves shall be made with caution to prevent damage while being removed.
  - 2. Return all existing and abandoned hydrants as specified.
- B. Existing Watermains
  - 1. No watermain abandonments shall be performed until the ENGINEER is satisfied that the new watermain is functional and meets all codes, standards, tests, and requirements.
  - 2. Abandonments shall only be allowed after all service connections have been transferred to the new watermain, when applicable.
  - 3. Perform the abandonments as shown on Contract Drawings and in accordance with Section 01731, Connections to Existing Facilities.

### 3.05 TREE TUNNELING

- A. Provide root protection at trees by boring casing pipe through root system.
  - 1. Use casing pipe as defined in Section 15121, Casing Pipe.
  - 2. All pipe installed in casing pipe must be restrained.
  - 3. PVC pipe may be installed in casing pipe if authorized by ENGINEER.

4. Fill annular space with pea gravel to satisfaction of ENGINEER.
5. The volume of pea gravel used shall be compared to the annular space volume to ensure complete filling. Incomplete filling of annular space will not be considered acceptable. CONTRACTOR shall remove pea gravel and reinstall, at his expense, if so ordered by the ENGINEER.

### 3.07 TESTING

- A. General  
Performance testing, leakage, hydrostatic, and proof-of-design tests shall be as specified in Section 15140 - Testing and Disinfection.
- B. Testing Criteria  
Perform pressure testing to the criteria listed in the table as shown on the Drawings.

### 3.08 DISINFECTION

- A. All watermains, hydrant branches, blow-offs, and ARV piping shall be tested and disinfected in accordance with Section 15140 - Testing and Disinfection.

### 3.09 GENERAL

- A. Install watermain, fittings, and accessories in accordance with applicable sections; as shown on the drawings; and, as specified, required, or directed.
- B. Tapping Information
  1. All materials as specified herein shall be installed by or under the direction of personnel who are acceptable to the Authority.
    - a. Threaded taps shall be made using a machine designed for cutting, threading and inserting the corporation without interruption of service.
      - 1) Teflon tape may be used on corporation threads.
    - b. Tapping sleeve connections shall be made using a machine to cut and remove the segment through the valve without interruption of service.
  2. Valve boxes shall be set plumb and shall be independently supported on concrete blocking so no weight will be transmitted to the curb stop or watermain.
  3. Service saddles and tapping saddles installed on prestressed concrete cylinder pipe shall be encased in a minimum of 2 inches of concrete mortar after installation.
  4. Service saddles shall be used under the following condition:
    - a. When water services are placed on 4-inch or smaller pipes.
    - b. When water services larger than 1-inch are placed on a 6-inch pipe.

- c. When water services larger than 1-<sup>1</sup>/<sub>2</sub>-inch are placed on an 8-inch pipe.
  - d. When water services are tapped to all plastic (PVC) pipe.
  - e. When services larger than 1-<sup>1</sup>/<sub>2</sub>-inch are placed on ductile iron pipe.
  - f. When water services are tapped to all asbestos-cement pipe.
5. CONTRACTOR is not allowed to excavate, disturb, or park any equipment beyond the Right-of-Way line without prior approval from the property owner.
  6. If minimum depth is not achieved for the water service at any location, CONTRACTOR shall either excavate and lower the service or repush/drill the service to the minimum depth, at his expense, until a satisfactory service is installed.
  7. Curb boxes are not allowed to be cut for any reason.
  8. Repair or replace any connections, which are leaking to ensure a watertight connection.
- C. Water Service Tubing
1. Copper tubing shall be installed in accordance with the applicable provisions of Section 02351 - Excavation, Backfill & Trenching, Section 15051 - Buried Piping Installation and Section 15107 - Copper Pipe.
  2. Bedding for service connection tubing shall be furnished, installed and coordinated with Section 02316 - Select Granular Materials.
- D. Water Service Installations
1. Existing service lines shall be maintained until such time as the proposed watermain has been installed, tested, and disinfected, and approval to place the watermain into service has been obtained. Existing services may then be transferred to the new watermain.
  2. New water service installations shall be installed by boring or jacking method under existing roads and pavements. Open-cut of water services across roads will not be allowed.
  3. Use tapping machines and equipment compatible with corporation stops and service saddles specified. Use tools and cutting equipment, which minimizes the amount of PVC shavings and remove shavings during tapping; retain coupon, and reduce stress during tapping. Single fluted cutters or twist drills shall not be used for tapping PVC piping.
  4. Service locations shown on the drawings are shown schematically only. The actual service locations shall be determined by ENGINEER and CONTRACTOR in the field.
  5. For additional information relating to water services, refer to the Drawings.
- E. Tapping Watermain.

1. Wet tap connections to existing watermains shall be as shown on the drawings.
2. The person or firm who will be performing the watermain tap shall be acceptable to the Authority.
3. Prior to ordering the tapping sleeve, the CONTRACTOR shall excavate a test pit to the depth required and expose the main to be tapped to accurately measure the outside diameter of the main. No tapping sleeve shall be ordered until this information has been obtained.
4. Tapping sleeves shall be suitable for use with the existing pipe to be tapped. Tapping sleeve shall be compatible with the tapping valve furnished.
5. Thrust blocks shall be constructed behind the wet tap connection as shown on the drawings and specified herein.
6. Refer to Section 15140 for additional requirements for tapping sleeve and valve testing.
7. After each tap has been completed, the CONTRACTOR shall keep the tapping area uncovered for a minimum period of one (1) hour to determine if any leakage is occurring. If any leakage has occurred, the tap shall be made watertight in a manner approved by the ENGINEER.
8. A full pipe coupon shall be retained as a result of the tapping operation.
9. The valves shall be kept closed until approval from the ENGINEER is given to open the valve.

F. Discrepancies

1. If discrepancies occur between the Drawings and field conditions, the CONTRACTOR shall notify the ENGINEER immediately.
2. The CONTRACTOR shall not proceed with the installation in areas of discrepancy until said discrepancy is resolved.

END OF SECTION

## SECTION 15106

### DUCTILE IRON PIPE, FITTINGS, AND ACCESSORIES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Work Specified

The work specified shall include all labor, material, equipment, tools, services and incidentals necessary to furnish and install ductile iron pipe, fittings and appurtenances as shown, specified and required.

###### B. Pipe Schedule

1. Hydrant piping:
  - a. Pipe Class 53.
  - b. All joints are to be restrained and only as follows:
    - 1) Mechanical joint pipe and fittings utilizing wedge action retainer glands.
    - 2) Anchor pipe and anchor fittings.
2. 4-inch through 12-inch watermain (except hydrant piping):
  - a. Pipe class 52.
  - b. Non-restrained joints
    - 1) Bell and spigot push-on joint pipe.
  - c. Restrained joints utilizing one of the following:
    - 1) Mechanical joint pipe and fittings utilizing wedge action retainer glands.
    - 2) Bell and spigot push-on joint pipe with ductile iron pipe wedge action restraining devices and mechanical joint fittings utilizing wedge action retainer glands.
    - 3) Flexible restrained joint pipe and fittings utilizing patented ductile iron locking segment(s) or flex ring with factory applied spigot retainer weldment.
    - 4) Flexible restrained joint pipe utilizing patented ductile iron locking segment(s) or flex ring with factory applied spigot retainer weldment and mechanical joint fittings utilizing wedge action retainer glands.

###### C. Related Work Specified Elsewhere

1. Section 15051 - Buried Piping Installation
2. Section 15110 - Valves and Appurtenances
3. Section 15120 - Piping Specialties and Accessories
4. Section 15140 - Testing and Disinfection

##### 1.02 QUALITY ASSURANCE

- A. Manufacturer's Qualifications
1. Manufacturer shall have a minimum of 5 years experience producing ductile iron pipe, fittings and accessories, and shall show evidence of at least 5 installations in satisfactory operation.
  2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers.
- B. Reference Standards
1. AWWA C104, American National Standard for Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water
  2. AWWA C105, American National Standard for Polyethylene Encasement for Ductile Iron Pipe Systems
  3. AWWA C110, American National Standard for Ductile-Iron and Gray-Iron Fittings, 3-inch through 48-inch, (75 mm through 1200 mm), for Water and Other Liquids
  4. AWWA C111, American National Standard for Rubber-Gasket Joints for Ductile Iron Pressure Pipe and Fittings
  5. AWWA C115, American National Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges
  6. AWWA C150, American National Standard for Thickness Design of Ductile-Iron Pipe
  7. AWWA C151, American National Standard for Ductile Iron Pipe, Centrifugally Cast, for Water
  8. AWWA C153, American National Standard for Ductile-Iron Compact Fittings. 3 In. Through 24 In. (76 mm through 610 mm) and 54 In. Through 64 In. (1400 mm through 1600 mm), for Water Service
  9. ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings
  10. ANSI B1.20, Pipe, Threads, General Purpose (Inch)
  11. ANSI B18.2.1, Square and Hex Bolts and Screws Inch Series, Including Hex Cap Screws and Lag Screws
  12. ANSI B18.2.2, Square and Hex Nuts
  13. ASTM A307, Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
  14. ASTM A354, Specification for Quenched and Tapered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners
  15. ASTM A536 Standard Specification for Ductile Iron Castings
  16. NSF/ANSI Standard 61
  17. Underwriter's Laboratories (UL)
  18. International Organization for Standardization (ISO)
  19. Factory Mutual Research Corporation
  20. 1996 Safe Drinking Water Act

### 1.03 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:

1. Detailed drawings and data on pipe, fittings and accessories.
  2. A materials list, which shall include full information regarding all components of the equipment. Materials of construction shall be presented in the listing.
- B. Laying Schedules or drawings when requested or required or when custom pieces or specially marked pipe is used. Field closures and field cuts, and manner of restrained joints shall be shown.
- C. Submit certificates of compliance with the applicable referenced standards.
- D. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by and independent, authorized laboratory.
- E. Furnish delivery tickets indicating the pipe manufacturer, pipe type and class, identifying that the pipe was new and from a manufacturer that has been submitted and approved.

#### 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the pipe, fittings and accessories. Furthermore, all ductile iron pipe requiring polyethylene encasement as per Section 2.02.B, where the polyethylene has been field pre-applied to the pipe shall be handled with suitably padded equipment to prevent damage to the coating. Do not drop or roll materials off trucks. All ductile iron pipe and fittings shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.
- D. Interiors of pipe, fittings and accessories shall be kept free from dirt and foreign matter.
- E. Store pipe and fittings on heavy wood blocking or platforms so they are not in contact with the ground.
- F. Pipe, fittings, and specials shall be unloaded opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

## 1.05 PIPE INSTALLATION SPECIALIST

- A. A factory trained and certified manufacturer's pipe installation specialist shall be present during CONTRACTOR start-up and for a total of 5 working days when pipe laying is in progress and thereafter shall be available during the course of the project to assist the OWNER, ENGINEER, and/or CONTRACTOR when requested by the OWNER, ENGINEER and/or CONTRACTOR. This field service shall be at no cost to the OWNER. This can include field review of pipe/fittings when requested by the OWNER, ENGINEER, and/or CONTRACTOR.
- B. The specialist shall submit three (3) copies of a written report to the ENGINEER presenting the findings of each visit. As a minimum, each report should include the following: date, day, time, purpose of the visit (and who initiated the visit), weather conditions, CONTRACTOR'S name, project name and the contract number, ENGINEER'S name, individuals contacted, location visited (station, street, field office, ENGINEER'S main office, OWNER'S office CONTRACTOR'S office, etc.), and any other pertinent information related to the visit (such as the results of individual pipe/fitting inspections, etc.)

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. General
  - 1. All products, including interior coatings shall be suitable for use in a potable water system.
  - 2. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.
  - 3. All ductile iron pipe, fittings and accessories shall be designed for a working pressure and field hydrostatic test pressure as shown in Section 15051, Buried Piping Installation.
  - 4. All ductile iron pipe, fittings, and accessories must be new materials in first-class condition. Used or recycled materials shall not be allowed, regardless of condition.
  - 5. All ductile iron pipe shall be provided from the same manufacturer.
  - 6. Pipe shall be fully gauged.
  - 7. Pipe shall be furnished in nominal laying lengths of 20 feet unless otherwise specified.
  - 8. Pipe and fittings shall be lined with cement mortar lining in accordance with AWWA C104, except it shall be double thickness and a bituminous seal coat meeting NSF/ANSI Standard 61. The exterior shall be provided with a bituminous coating in accordance with AWWA C151. Fittings may be lined with an NSF/ANSI Standard 61 approved fusion bonded epoxy meeting the applicable sections of AWWA C116.

9. Bonded joints may be required in areas where the ENGINEER has evaluated soil conditions and has recommended that corrosion protection is required at locations as shown on the drawings. The pipe manufacturer shall supply all joint bonding materials, including #4 AWG stranded insulated copper wire bonding jumpers.

**B. Ductile Iron Mechanical Joint Pipe and Fittings**

1. Ductile Iron Mechanical Joint Pipe:
  - a. Pipe shall be centrifugally cast ductile iron conforming to the requirements of AWWA C151 for material, dimensions, tolerance, tests, markings and other requirements.
  - b. Manufacturer:
    - 1) American Cast Iron Pipe Co.,
    - 2) Atlantic States, Inc.,
    - 3) Clow - A Division of McWane, Inc.,
    - 4) Griffin,
    - 5) US Pipe.
2. Ductile Iron Mechanical Joint Fittings:
  - a. Tees, bends, elbows, reducers, increasers, offsets and other such fittings shall be mechanical joint ductile iron compact body conforming to AWWA C110 or AWWA C153, as specified.
  - b. Reducers shall be concentric or eccentric where specified.
  - c. Fittings shall be suitable for use with polyvinyl chloride pressure pipe.
  - d. Manufacturer:
    - 1) American Cast Iron Pipe Co.,
    - 2) Clow - A Division of McWane, Inc.,
    - 3) Griffin,
    - 4) Sigma Corp.,
    - 5) Star Pipe Products, Inc.
    - 6) Tyler - A Division of McWane, Inc.,
    - 7) US Pipe.
3. Joints for Ductile Iron Mechanical Joint Pipe and Fittings:
  - a. Joints shall conform to AWWA C111 and shall be mechanical joint bell and spigot and be furnished complete with all necessary accessories consisting of ductile iron follower glands, plain tipped rubber gaskets, nuts and bolts, unless otherwise specified.
  - b. Fittings shall have mechanical joint ends and be furnished with all necessary joint accessories consisting of ductile iron follower glands, (or cast iron glands for cast iron fittings), plain tipped rubber gaskets, nuts and bolts, unless otherwise specified. Split follower glands shall be furnished and installed only when approved by the ENGINEER.
  - c. All nuts and tee bolts for mechanical joint accessories shall be stainless steel or fluorocarbon coated as specified herein.
4. Restrained Joints for Ductile Iron Mechanical Joint Pipe and Fittings:

- a. Restrained joints for mechanical joint pipe and fittings shall be made by restraining the pipe on each side of the fitting for all joints along the length of pipe as shown, specified or required.
- b. Restraining shall be accomplished at the mechanical joint fitting by use of a mechanical joint wedge action retainer that incorporates mechanical joint restraint into the design of the follower gland with individually actuated wedges that are tightened against the barrel of the pipe, as specified herein.

C. Push-On Ductile Iron Pipe and Fittings

1. Push-On Ductile Iron Pipe:
  - a. Pipe shall be centrifugally cast ductile iron conforming to the requirements of AWWA C151 for material, dimensions, tolerance, tests, markings and other requirements.
  - b. Manufacturer:
    - 1) American Cast Iron Pipe Co.,
    - 2) Atlantic States, A Division of McWane, Inc.,
    - 3) Clow - A Division of McWane, Inc.,
    - 4) Griffin,
    - 5) US Pipe.
2. Fittings:
  - a. Tees, bends, elbows, reducers, increasers, offsets and other such fittings shall be mechanical joint ductile iron compact body conforming to AWWA C110 or AWWA C153 and as specified herein.
3. Joints for Push-On Ductile Iron Pipe and Fittings:
  - a. Joints shall conform to AWWA C111 and shall be bell and spigot and be furnished complete with circular rubber gaskets, and other accessories as necessary for a complete installation.
  - b. Fittings shall have mechanical joint ends and be furnished with all necessary joint accessories consisting of ductile iron follower glands, (cast iron glands for cast iron fittings), plain tipped rubber gaskets, nuts and bolts, unless otherwise specified. Split follower glands shall be furnished and installed only when approved by the ENGINEER.
  - c. All nuts and tee bolts for mechanical joint accessories shall be stainless steel or fluorocarbon coated as specified herein.

D. Ductile Iron Flexible Restraint Joint Pipe and Fittings and/or Mechanical Joint Fittings

1. Ductile Iron Flexible Restraint Joint Pipe:
  - a. Pipe shall be centrifugally cast ductile iron conforming to the requirements of AWWA C151 for material, dimensions, tolerance, tests, markings, and other requirements.

- b. Restrained joint pipe shall be designed for a water working pressure of 350 psi for pipe sizes 4-inch through 20-inch and 250 psi for pipe sizes 24-inch through 54-inch.
  - c. Flexible restraint joints shall consist of a boltless, glandless restraining system with factory applied spigot weld ring or weldment (weld bead of established height and width), which retains the wedge-shaped locking segments. These locking segments are either inserted into the bell prior to spigot engagement or inserted after spigot engagement by “caulking” a snap-ring into the bell, or inserting the segments through slots cast into the bell face.
  - d. Pipe that utilizes gaskets with embedded restraining gripper or friction segments is not acceptable.
  - e. Field applied weldments or weldments applied in a shop other than at the manufacturing facility are not allowed. Field cuts shall be restrained by cutting the barrel of the pipe and inserting it into a mechanical joint fitting and using wedge action retainer glands. As an alternative, flexible restrained closures may be incorporated into the Work provided they are accounted for in the approved laying schedule.
  - f. Manufacturer:
    - 1) American Cast Iron Pipe Co. - Flex Ring,
    - 2) Clow - Super Lock,
    - 3) US Pipe - TR Flex,
    - 4) Or approved equal.
2. Ductile Iron Restrained Fittings and Mechanical Joint Fittings:
- a. All ductile iron fittings shall meet the requirements of AWWA C153 or AWWA C110.
  - b. Fittings may be either flexible restraint joint or mechanical joint. If flexible restraint joint fittings are used, a certain number of fittings must be mechanical joint to allow for field adjustments in line or grade.
  - c. Fittings that utilize gaskets with embedded restraining gripper or friction segments are not acceptable.
  - d. Field applied weldments or weldments applied in a shop other than at the manufacturing facility are not allowed.
  - e. Manufacturer of Flexible Restraint Joint Fittings:
    - 1) American Cast Iron Pipe Co. - Flex Ring,
    - 2) Clow - Super Lock,
    - 3) US Pipe - TR Flex,
    - 4) Or approved equal.
  - f. Manufacturer of Mechanical Joint Fittings:
    - 1) American Cast Iron Pipe Co.,
    - 2) Clow - A Division of McWane, Inc.,
    - 3) Griffin,

- 4) Sigma Corp.,
- 5) Star Pipe Products, Inc.
- 6) Tyler - A Division of McWane, Inc.,
- 7) US Pipe.

E. Ductile Iron Anchor Pipe and Fittings

1. Ductile iron anchor pipe and fittings shall provide positive joint restraint by incorporating an integrally cast anchor gland (stop shoulder) at one end and an anchor, mechanical joint or plain end at the other end. The plain end, when fitted with a standardized mechanical joint gasket is to be inserted into a mechanical joint bell and bolted tight. A split, rotating ring shall be provided on the elbows, tees and on one end of the couplings or anchor pipe to permit vertical alignment regardless of the mating bolt hole alignment.
  - a. Pipe shall be centrifugally cast ductile iron conforming to the applicable requirements of AWWA C151 for material, dimensions, tolerance, tests, markings and other requirements.
  - b. Fittings shall conform to the applicable requirements of AWWA C110 or AWWA C153.
  - c. Anchor pipe shall be furnished in lengths from 18-inches to 18 feet as shown or specified.
  - d. Pipe and fittings shall be furnished complete with circular rubber gaskets conforming to AWWA C111, and other accessories as necessary for a complete installation.
  - e. Manufacturer:
    - 1) Tyler - A Division of McWane, Inc.,
    - 2) Clow - A Division of McWane, Inc.

F. Mechanical Joint Wedge Action Retainer Gland

1. Restraint shall be accomplished by use of a retainer gland that incorporates mechanical joint restraint into the follower gland with individually actuated wedges that increase their resistance to pull-out as pressure or external forces increase.
2. The joint restraint ring and its wedging components shall be made of grade 60-42-10 ductile iron conforming to ASTM A536. The wedges shall be ductile iron heat treated to a minimum hardness of 370 BHN. T-bolts shall be fluorocarbon coated as specified herein.
3. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell conforming to AWWA C111 and AWWA C153.
4. Torque limiting twist off nuts shall be used to insure the proper actuation of the wedges. When the nut is sheared off, a standard hex head shall remain.
5. Manufacturer, for use on ductile iron pipe:
  - a. EBAA Iron, Series 1100 MEGALUG,
  - b. Uni-Flange Series 1400,

- c. SIGMA One-Lok,
- d. Star Pipe products – Stargrip.

G. Push-On Ductile Iron Pipe Joint Restraining Device

- 1. When specified or allowed by the ENGINEER, restraining push-on ductile iron pipe joints shall be accomplished by use of a joint restraint system that consists of restraining rods and split ductile iron clamping rings, installed on the spigot and behind the bell. The clamping ring shall incorporate a series of machined serrations on the inside surface to provide 360 degree contact and support of the pipe barrel. Lateral thrust restraint is provided when the side clamping bolts are tightened allowing the serrations to lock onto the pipe barrel.
- 2. Threaded restraining rods and bolts and clamping bolts and nuts shall be fluorocarbon coated or type 304 stainless steel.
- 3. The joint restraint rings shall be made of high strength, grade 65-45-12 ductile iron conforming to ASTM A536.
- 4. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell conforming to AWWA C111 and AWWA C153.
- 5. Restraining push-on joints as specified herein shall not be allowed for hydrant branches.
- 6. Restraining push-on joints shall be used on pipe sizes 6-inch to 12-inch only when allowed or specified. Restraining push-on joints in this manner shall not be allowed on pipe larger than 12 inches.
- 7. Manufacturer, for use on ductile iron pipe:
  - a. Uni-Flange Series 1390,
  - b. Or approved equal.

H. Fluorocarbon Coated Nuts and Bolts

- 1. T-bolts shall be heat treated ductile iron material with a minimum of 65,000 psi tensile strength and 45,000 psi yield strength meeting ANSI/AWWA C111/A21-95.
- 2. Nuts and bolts shall have a fluorocarbon SC-1 coating.
- 3. Manufacturer:
  - a. Standco Industries,
  - b. Or approved equal.

I. Threaded Harnessing Rods and Bolting Accessories

- 1. Threaded harnessing rods shall only be used when approved by the ENGINEER.
- 2. Harness rods and nuts shall be heat treated steel with a minimum yield strength of 70,000 psi and a minimum ultimate strength of 110,000 psi.
- 3. Threads shall conform to American Standard Course Threads.
- 4. Rods and nuts shall be galvanized or cadmium plated, unless otherwise specified.

5. Non-coated materials may be protected with the application of two (2) coats of a bituminous preservative coating after installation.
6. Oil, grease, paint, or any coating, which requires drying will not be acceptable.

## 2.02 COATINGS AND LININGS FOR DUCTILE IRON PIPE AND FITTINGS

### A. Coatings and Linings for Ductile Iron Joint Pipe and Fittings

1. Ductile iron pipe and fittings shall be lined with a bituminous seal coated cement-mortar lining in accordance with AWWA C104, except the thickness for pipe shall be double that specified.
2. Ductile iron pipe and fittings shall be coated on the outside with a bituminous coating, approximately one millimeter thick. Fittings may be lined with an NSF/ANSI Standard 61 approved fusion bonded epoxy meeting the applicable sections of AWWA C116.
3. The exterior of flanged ductile iron pipe and fittings for exposed piping shall be coated with a primer coating suitable to receive epoxy paint finish paint system.

## PART 3 - EXECUTION

### 3.01 GENERAL

- A. Refer to Section 15051 for buried piping installation.

END OF SECTION

## SECTION 15110

### VALVES AND APPURTENANCES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

###### A. Work Specified

The work specified shall include all labor, material, equipment, services and incidentals necessary to furnish and install valves and appurtenances as shown, specified and required.

###### B. Related Work Specified Elsewhere

1. Section 02080 - Fire Hydrants
2. Section 15051 - Buried Piping Installation
3. Section 15106 - Ductile Iron Pipe and Fittings
4. Section 15140 - Testing and Disinfection

##### 1.02 QUALITY ASSURANCE

###### A. Manufacturer's Qualifications

1. Manufacturer shall have a minimum of 5 years experience producing valves and appurtenances, and shall show evidence of at least 5 installations in satisfactory operation.
2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturer's.

###### B. Reference Standards

1. ANSI B16.1, Cast Iron Pipe Flanges and Flanged Fittings
2. ANSI B16.4, Cast Iron Fittings
3. ASTM A48, Standard Specification for Gray Iron Castings
4. ASTM A126, Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings
5. ASTM A307, Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength
6. ASTM A354, Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs and Other Externally Threaded Fasteners
7. ASTM A436, Standard Specification for Austenitic Gray Iron Castings
8. ASTM A536, Standard Specification for Ductile Iron Castings
9. ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings
10. AWWA C500, Standard for Metal-Seated Gate Valves for Water Supply Service

11. AWWA C504, Standard for Rubber-Seated Butterfly Valves
12. AWWA C508, Standard for Swing Check Valves for Waterworks Service, 2 in.(50 mm) Through 24 in. (600 mm) NPS
13. AWWA C509, Standard for Resilient Seated Gate Valves for Water Supply Service
14. AWWA C800, Underground Service Line Valves and Fittings
15. American Gear Manufacturers Association (AGMA) Standards
16. NEMA, National Electrical Manufacturer's Association
17. NEC, National Electrical Code
18. NSF/ANSI Standard 61
19. Underwriter's Laboratories (UL)
20. International Organization for Standardization (ISO)
21. Factory Mutual Research Corporation
22. 1996 Safe Drinking Water Act
23. Manufacturing Standardization Society of the Valve and Fittings Industry (MSS)

### 1.03 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
  1. Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on all valves and appurtenances.
  2. Deviations from Drawings and Specifications.
  3. Engineering data including dimensions, materials, size and weight.
  4. Fabrication, assembly, installation and wiring diagrams.
  
- B. Operation and Maintenance Data: Submit complete manuals including:
  1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.
  
- C. Shop Tests: Submit for approval the following:
  1. Hydrostatic tests for each valve when required by the valve specifications included herein.
  2. Each gate valve shall have the leakage test required by Section 5 of AWWA C509 performed with the pressure differential applied in both directions.
  3. The manufacturer of butterfly valves shall submit certified copies of reports covering the bi-directional leakage tests in accordance with Section 6, AWWA C504.
  
- D. Certificates:
  1. Where specified or otherwise required by ENGINEER, submit test certificates.
  2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.

3. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.
- E. Delivery Tickets:
1. Furnish delivery tickets indicating the valve manufacturer, valve type and class, identifying that the valves are new and from a manufacturer that has been submitted and approved.
- F. Testing Criteria:
1. CONTRACTOR must provide manufacturer's test specifications for all tapping sleeve and valves prior to field testing.

#### 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Equipment used for unloading shall be covered with wood or rubber to avoid damage to the exterior of the valves and accessories. Do not drop or roll materials off trucks. All valves and appurtenances shall be handled with padded slings or other appropriate equipment. The use of cables, hooks or chains will not be permitted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.
- D. Interiors of valves and appurtenances shall be kept free from dirt and foreign matter.
- E. Store valves and appurtenances on heavy wood blocking or platforms so they are not in contact with the ground.
- F. Valves and appurtenances shall be unloaded opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. General
1. All products, including interior coatings, shall be suitable for use in a potable water system.

2. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.
3. Valves shall have manufacturer's name and working pressure cast in raised letters on valve body. Valves shall be suitable for test pressures specified in Section 15051, Buried Piping Installation.
4. Manual valve operators shall turn clockwise to close unless otherwise specified. Valves shall indicate the direction of operation.
5. Valve shall be treated as a bulkhead (dead end) condition and pipe joints shall be restrained on both sides of the valve for the lengths as shown, specified, or required.
6. All valves, operators, and appurtenances shall be designed to withstand the working and hydrostatic test pressures as specified in Section 15051, Buried Piping Installation.
7. Unless otherwise specified all flanged valves shall have ends conforming to ANSI B16.1, Class 125.
8. All bolts, nuts and studs shall, unless otherwise approved, shall conform to ASTM A307, Grade B; or ASTM A354. All bolts, nuts and studs on or required to connect submerged or buried valves shall be fluorocarbon coated.
9. Bolts and nuts shall have hexagon heads and nuts.
10. Gasket material and installation shall conform to manufacturer's recommendations.
11. Identification: Identify each valve 4 inches and larger with a brass or stainless steel nameplate stamped with the approved designation. Nameplate shall be permanently fastened to valve body at the factory. Stenciled designations are acceptable for buried valves.
12. All valves and appurtenances must be new materials in first-class condition. Used or recycled materials will not be allowed, regardless of condition.

**B. Gate Valves, Flanged and Screwed**

1. 2<sup>1</sup>/<sub>2</sub> inches Diameter and Smaller: Valves shall be bronze screwed ends, solid wedge, rising stem, screwed bonnet type with screwed ends.
  - a. Product and Manufacturer: Provide one of the following:
    - 1) Fig. 49-U, as manufactured by Jenkins Brothers or,
    - 2) Watts - WGV,
    - 3) Or approved equal.
2. 3-Inch Diameter and Larger:
  - a. Valves shall be iron body, bronze mounted, rising stem and in conformance with AWWA C500.
  - b. Unless otherwise shown or specified exposed valves shall have flanged ends conforming to ANSI B16.1, Class 125 conforming to ANSI A21.11.
  - c. Exposed manually operated gate valve shall be equipped with hand wheels. Gate valves located more than five feet above the

operating floor shall be provided with chainwheels, sprockets, and aluminum chain. The chain shall extend to three feet above the operating floor.

- d. Manufacturer: Provide gate valves of one of the following:
  - 1) Mueller Company,
  - 2) Dresser Manufacturing Division, M&H Division,
  - 3) Or approved equal.

C. Resilient Seat Gate Valves

1. General

- a. The design working pressure and test pressure for all valve sizes shall be as described in AWWA C509 and materials conforming to C509. All valves shall be designed to operate vertically in a horizontal pipeline.
- b. The valve disc shall be fully encapsulated with a synthetic elastomer and shall seat against a corrosion-resistant surface.
- c. Valves for buried applications shall have mechanical joint ends and be restrained per Section 15106, Ductile Iron Pipe, Fittings, and Accessories, by use of a mechanical joint wedge action retainer gland to resist movement.
- d. All bolts and nuts, including bonnet assembly and seal plate hold-down, shall be fluorocarbon coated high strength, corrosion resistant low alloy steel.
- e. Valves for exposed applications shall have flanged ends conforming to ANSI B16.1, Class 125 conforming to ANSI A21.11.
- f. Thin walled AWWA C515 valves shall not be allowed.

2. Gate Valve

- a. The body, bonnet, seal plate, disc and hub nut shall be iron.
- b. Non-rising valve stem, stem nuts, glands and bushings shall be bronze.
- c. Shaft "O"-ring seals shall be synthetic rubber or Buna-N and shall be capable of being replaced under pressure.
- d. All internal parts shall be accessible without removing the main body from the pressurized line.

3. Operators

- a. Operator shall be suitable for buried service.
- b. Operators shall be as specified in AWWA C509 for submerged, buried, or in-plant service as specified.
- c. Operators shall be equipped with a 2-inch square operating nut and shall be full gasketed and grease packed for buried service. Operating nuts shall turn clockwise to close the valve. A cast arrow showing the direction of valve opening shall be supplied.

4. Manufacturer:

- a. Kennedy Valve Company, No. 8571,

- b. Mueller, 2360-16,
- c. Or approved equal.

D. Butterfly Valves

1. General

- a. Butterfly valves shall be short-body design conforming to AWWA C504 and shall have flanged ends for exposed applications and mechanical joint or victaulic ends for buried applications as specified.
- b. Valves for buried applications shall have mechanical joint ends and be restrained per Section 15106, Ductile Iron Pipe, Fittings, and Accessories, by use of a mechanical joint wedge action retainer gland. Valves may also have Victaulic ends as show, specified, or required.
- c. Valves shall be tight closing, rubber seat type with recessed rubber seat securely mounted to the valve body.
- d. All other bolts, nuts and studs shall, unless otherwise approved, be flouorocarbon coated.
- e. Bolts and nuts shall have hexagon heads and nuts.
- f. Gasket material and installation shall conform to manufacturer's recommendations.
- g. Identification: Identify each valve with a brass or stainless steel nameplate stamped with the approved designation. Nameplate shall be permanently fastened to valve body at the factory.
- h. All butterfly valves and their operators shall be designed for buried and submerged conditions and shall open counterclockwise.

2. Butterfly Valve

- a. Body shall be cast iron ASTM A126, Class B, with integrally cast shaft bearing hubs. Flanged ends shall conform to ANSI B16.1 and match existing.
- b. Valve shafts shall be Type 304 stainless steel solid one piece design for valve sizes 3" through 20" and stub shaft design for valves larger than 24" in diameter with an adjustable thrust bearing to center the valve disc.
- c. Discs shall be of one-piece design, cast iron or ductile with a Type 316 stainless steel seating edge with demonstrated test results of 100,000 cycles of drip tight capability.
- d. Valve seats shall be synthetic rubber. Rubber seats shall be bonded to the valve body. The seat bond must withstand a 75 pound pull under test procedure ASTM D429, Method B.
- e. Valve bearings shall be as specified in Sect. 3, AWWA C504. The shaft bearings shall be teflon or teflon lined/fiberglass backed.
- f. Valve shaft packing shall be non-metallic, split-V self-compensating Chevron style.

3. Operators
  - a. Operators shall be permanently lubricated and totally enclosed and be provided with a handwheel, chainwheel or 2-inch square nut, as specified.
  - b. Operators shall be equipped with a totally enclosed permanently lubricated lever-traveling nut drive, self locking type and shall be designed to hold the valve in any intermediate position between “fully open” and “fully closed” without creeping or fluttering.
  - c. Operators shall be equipped with adjustable stop-limiting devices to prevent over travel of the disc in the open and closed positions. Stops shall be located within the operator housing and be capable of adsorbing the full operator torque with minimum safety factor of 5.
  - d. Operator housing, supports and connections to the valve shall have provisions for four-bolt mounting.
  - e. Operator components shall withstand an input torque of "450" foot-pounds at the extreme operator positions without damage.
  - f. Enclosed lever-traveling nut operators shall have a gear ratio designed not to exceed 80 pounds pull to meet the required operator torque.
  - g. Operators shall turn clockwise to close the valve.
  - h. Extension stems shall not be allowed. All valves shall be located such that the cover over the top of the operating nut shall not exceed 5-foot in depth.
4. Manufacturer:
  - a. Henry Pratt Co, Groundhog,
  - b. DeZurik,
  - c. Or approved equal.

E. Tapping Sleeve and Valve

1. Tapping Sleeve
  - a. Tapping sleeves and valves shall be used for connections larger than 2 inches and shall be stainless steel constructed of 18-8 Type 304 stainless steel.
  - b. All bolts and nuts shall be 18-8 Type 304 stainless steel, with heavy hex nuts to be fluorocarbon coated to prevent galling.
  - c. Tapping sleeves shall be designed and sized in accordance with the recommendations of the manufacturer.
  - d. The sleeve shall be fabricated in two halves, for assembly around the watermain by means of bolts and gaskets to form a watertight seal. Bolts shall be removable and the gasket shall be a 360 degree gridded type to resist oil, alkalies, and suitable for water service.
  - e. The flange shall be 18-8 type 304 stainless steel, the outlet side shall conform to AWWA C 207 (ANSI B16.1, class 125), 150 lb drilling for attachment to standard tapping valves. 18-8 type 304

stainless steel flange bolts and flange gasket shall be supplied with tapping sleeve.

2. Tapping Saddle for Prestressed Concrete Cylinder Pipe.
    - a. Tapping saddle assembly shall consist of tapping saddle, steel bands, rubber gasket, and a separate flanged tapping gland.
    - b. The assembly shall be so designed that the saddle must be installed on the pipe before the prestressing wires can be cut. The gland is to be a separate piece that is installed after the wires are cut and is held against the cylinder by bolting its flange to the flange on the saddle. The outlet on the gland shall allow a tapping valve, as specified herein, to be bolted to it.
  3. Tapping Valve (16-inch diameter and smaller):
    - a. Valves for tapping sleeves 16-inches and smaller shall be resilient seat as specified in paragraph 2.01.C herein and shall be specially designed for this purpose.
    - b. The end flange of the tapping valve shall mate with the flange of the tapping sleeve and conform to AWWA C 207 (ANSI B16.1, class 125), 150 lb drilling and to the dimensions of MSS SP-60. The other end of the tapping valve shall be mechanical joint, unless otherwise specified.
  4. Tapping Sleeve Manufacturer for Tapping Ductile Iron, PVC Pipe, or ACP Pipe.
    - a. Mueller, Model No. 304,
    - b. Ford style FTSS,
    - c. Smith Blair 665,
    - d. Or approved equal.
  5. Tapping Saddle Manufacturer for Prestressed Concrete Cylinder Pipe:
    - a. Price Brothers,
    - b. Or approved equal.
  6. Tapping Valve Manufacturer:
    - a. Mueller, No. 2360/2361,
    - b. Kennedy No. 8950,
    - c. Or approved equal.
- F. Check Valves - Liquid Service
1. General:
    - a. Check valves shall absolutely prevent the return of water back through the valve when the upstream pressure decreases below the downstream pressure. The valve shall be tight seating.
  2. 22-Inches Diameter and Smaller: Valves shall be bronze, screwed ends with screw in cap suitable for 150 psi service.
    - a. Product and Manufacturer: Provide one of the following:
      - 1) Fig. 92-A, as manufactured by Jenkins Brothers,
      - 2) Fig. 34-1/2, as manufactured by Crane Company,
      - 3) Or approved equal.

G. Air Release Valves

1. Air release valves shall be designed to operate automatically under pressure to release entrapped air from a watermain, pump, tank, or water system. Once the air has been released, the valve shall close and remain closed until reopened by entrapped air. No leakage or process fluid will be permitted.
2. All internal valve components shall be stainless steel.
3. The air release valve shall be float operated and shall incorporate a compound lever mechanism to enable the valve to automatically release accumulated air from a fluid system that system is pressurized and operating.
4. The air release valve shall close drop tight, incorporating an adjustable Buna-N orifice button.
5. The float shall be stainless steel and be capable of withstanding a test pressure of 300 psi.
6. The linkage/lever mechanism shall be able to be removed from the valve without disassembly of the mechanism, and shall be designed to prevent jamming.
7. The body and cover shall be cast iron conforming to the requirements of ASTM A126 Class B, and shall be designed to withstand a test pressure of 450 psig.
8. Manufacturer:
  - a. ValMatic, model #38,
  - b. Or approved equal.

H. Combination Air and Vacuum Release Valves

1. Combination air release valves shall be designed to relieve entrapped air and to break a siphon in a pipeline regardless of flow direction.
2. All internal valve components shall be corrosion-resistant.
3. Manufacturer:
  - a. ValMatic, valve #201C.2,
  - b. Or approved equal.

2.02 PAINTING

A. Shop Painting

1. Clean and prime coat ferrous metal surfaces.
2. All interior wetted ferrous surfaces of valves and appurtenances except finished or bearing surfaces shall be shop-painted with an approved epoxy paint system certified to NSF/ANSI Standard 61 for potable water and applied in accordance with the paint system manufacturer's recommendations.
3. Coat machined, polished and non-ferrous surfaces including gears, bearing surfaces and similar unpainted surfaces with corrosion prevention compound listed in NSF/ANSI Standard 61 and applied in accordance

with the manufacturer's recommendations. Maintain coating during storage and until equipment begins operation.

## PART 3 - EXECUTION

### 3.01 INSTALLATION

- A. Install valves and appurtenances as shown on the Drawings and in accordance with the manufacturer's recommendations.
- B. All valves shall be kept in the closed position until otherwise directed by the ENGINEER. Hydrant valves shall be opened during the hydrostatic testing and then closed until the watermain is placed into service.
- C. Install all valves so that handwheels, levers, or wrenches can be conveniently turned from operating area and as approved by the ENGINEER.
- D. Install all valves plumb and level unless otherwise approved. Valves shall be installed free from distortion and strain caused by misaligned piping, equipment, or other causes.
- E. CONTRACTOR shall operate each valve full open to full close in the presence of ENGINEER. The number of turns shall be recorded and provided to OWNER with the Record Drawings.

END OF SECTION

## SECTION 15120

### PIPING SPECIALTIES AND ACCESSORIES

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work Specified
  - 1. CONTRACTOR shall provide all labor, materials, equipment, tools, services, and incidentals necessary to furnish and install piping specialties and accessories as shown, specified and required. Included, but not limited to the following: couplings, repair clamps, joint clamps, service saddles, service fittings, water meter fittings, tile set, corporation stops, curb stops and curb boxes.
- B. Related Work Specified Elsewhere
  - 1. Section 02316 - Select Granular Materials
  - 2. Section 02351 - Excavation, Backfill and Trenching
  - 3. Section 15106 – Ductile Iron Pipe and Fittings
  - 4. Section 15110 - Valves and Appurtenances
  - 5. Section 15140 - Testing and Disinfection

##### 1.02 QUALITY ASSURANCE

- A. Manufacturer's Qualifications
  - 1. Manufacturer shall have a minimum of 5 years of experience in the production of substantially similar types of piping specialties specified and shall show evidence of satisfactory service in at least 5 installations.
  - 2. Parts Interchangeability: It is the intent of these specifications that all materials furnished herein shall be compatible with similar materials of other manufacturers.
- B. Reference Standards
  - 1. AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water
  - 2. AWWA C115, American National Standard for Flanged Ductile-Iron Pipe with Ductile-Iron Pressure Pipe and Fittings
  - 3. AWWA C301, Prestressed Concrete Pressure Pipe, Steel-Cylinder Type, for Water and Other Liquids
  - 4. AWWA C600, Standard for Installation of Ductile-Iron Watermains and Their Appurtenances
  - 5. AWWA C605, Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water
  - 6. AWWA C651, Standard for Disinfecting Watermains

7. AWWA C800, Underground Service Line Valves and Fittings
8. AWWA C900, Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch Through 12-inch for Water Distribution
9. ASTM A536, Standard Specification for Ductile Iron Castings
10. ASTM B92, Specification for Standard Size Seamless Copper Pipe
11. ASTM B62, Standard Specification for Composition Bronze or Ounce Metal Castings
12. ASTM D2000, Standard Classification System for Rubber Products in Automotive Applications
13. NSF/ANSI Standard 61
14. Underwriter's Laboratories (UL)
15. International Organization for Standardization (ISO)
16. Factory Mutual Research Corporation
17. 1996 Safe Drinking Water Act

### 1.03 SUBMITTALS

- A. Shop Drawings: Submit for approval the following:
  1. Manufacturer's literature, illustrations, specifications, detailed drawings, data and descriptive literature on all piping specialties.
  2. Deviations from Drawings and Specifications.
  3. Engineering data including dimensions, materials, size and weight.
  4. Fabrication, assembly, installation and wiring diagrams.
- B. Operation and Maintenance Data: Submit complete manuals including:
  1. Copies of all Shop Drawings, test reports, maintenance data and schedules, description of operation, and spare parts information.
- C. Certificates:
  1. Where specified or otherwise required by ENGINEER, submit test certificates.
  2. The CONTRACTOR shall submit certificates of compliance with the applicable referenced standards.
  3. Submit certificate of compliance with NSF/ANSI Standard 61 for all products under this section, including interior coatings, by an independent, authorized laboratory.
- D. Delivery Tickets:
  1. Furnish delivery tickets indicating the manufacturer, accessory type and class, identifying that the equipment was new and from a manufacturer that has been submitted and approved.

## 1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. During delivery and handling, all materials shall be braced and protected from any distortion or damage; any such distortion or damage shall be basis for rejection of the materials.
- B. Handle all materials very carefully. Materials which are cracked, dented or otherwise damaged will not be accepted.
- C. The materials shall be inspected before and after unloading. Materials that are found to be cracked, gouged, chipped, dented or otherwise damaged will not be accepted.
- D. Interiors of pipe, fittings and accessories shall be kept free from dirt and foreign matter.
- E. Store piping specialties and accessories on heavy wood blocking or platforms as necessary so they are not in contact with the ground.
- F. Pipe, fittings, and specials shall be unloaded as necessary opposite to or as close to the place where they are to be used as is practical to avoid unnecessary handling.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. General
  - 1. All products, including interior coatings shall be suitable for use in a potable water system.
  - 2. All products, including wetted parts, shall be certified to meet NSF/ANSI Standard 61.
  - 3. All piping specialties and accessories must be new materials in first-class condition. Used or recycled materials will not be allowed, regardless of condition.
- B. Couplings
  - 1. Sleeve Type, Flexible Couplings:
    - a. Material: Steel, with epoxy coated sleeve.
    - b. Gasket: Manufacturer's standard best quality for the service intended.
    - c. Bolts and Nuts: Buried or submerged couplings shall be provided with Type 304 stainless steel or fluorocarbon coated bolts and nuts.

- d. Couplings shall be designed for a working pressure and field hydrostatic test pressure as identified in Section 15051, Buried Piping Installation.
- e. Harnessing:
  - 1) Harness couplings to restrain pressure piping. Couplings shall be designed for a working pressure and field hydrostatic test pressure as identified in Section 15051, Buried Piping Installation.
  - 2) Adjacent flanges shall be tied with bolts of corrosion resistant alloy steel. Provide flange mounted stretcher bolt plates and lugs as required and to be designed by coupling manufacturer, unless otherwise approved.
  - 3) Conform to dimensions, size, spacing and materials for lugs, bolts, washers and nuts as recommended by manufacturer and approved by ENGINEER for the pipe size, wall thickness and test pressure required. However, the following minimum bolting shall be provided if not specifically stated by the ENGINEER.

Pipe Diameter (In.)	Minimum Number of Bolts	Bolt Diameter (In.)	At (Degrees)
4	2	5/8	180
6-8	2	3/4	180
10-12	2	7/8	180
14-20	4	1	90
24-48	4	1-1/2	90

- f. Remove pipe stop unless otherwise shown or specified.
  - g. Couplings 16-inches to 24-inches shall be furnished as long laying lengths of 16-inches. Couplings over 24-inches shall be furnished as 10-inch lengths.
  - h. Manufacturer:
    - 1) Dresser Industries, Style 138, for sizes up to 12-inches, Dresser Industries, Style 38, for sizes over 12-inches,
    - 2) Smith-Blair, Type 411, (or type 441 where specified),
    - 3) Or approved equal.
2. Hymax Coupling:
- a. Material: Center sleeve shall be fabricated of high strength carbon steel tubing. Compression end rings to be either one bolt or two fabricated of carbon steel.

- b. Gasket: Two layered gaskets of which the inner ring is removable to expand the range of the coupling. Material shall be EPDM according to NSF61.
- c. Bolts and Nuts: Buried or submerged couplings shall be provided with type 304 stainless steel. Bolts to be coated with an anti-seize coating to prevent galling.
- d. Coating: Interior and exterior shall be provided with NFS-61 approved fusion bonded epoxy coating.
- e. Harnessing: as specified herein.
- f. To be used only when approved by ENGINEER.
- g. Manufacturer:
  - 1) Dresser Industries Style 262 for sizes up to 12-inches,
  - 2) Or approved equal.

C. Flanged Coupling Adapter

- 1. The body shall be ductile iron conforming to ASTM A536. The bolt circle, bolt size, and spacing shall conform to AWWA C115 flange drilling.
- 2. The follower gland shall be ASTM A536 ductile iron.
- 3. Gaskets and “O” rings shall be grade 30 standard.
- 4. Nuts and bolts shall be fluorocarbon coated or Type 304 stainless steel, high strength, low alloy.
- 5. Provide fusion bonded epoxy coating on the gasket ring and shop prime enamel on the body.
- 6. Flange coupling adapter shall not be provided with anchor studs, which are not allowed.
- 7. Flange coupling adapter shall be suitable for use on ductile or cast iron pipe to the outside diameter specified.
- 8. Flange coupling adapters shall be restrained as shown, specified, or required.
- 9. Manufacturer:
  - a. Smith-Blair, Style 912,
  - b. Dresser, Style 128,
  - c. Ford FFCA,
  - d. Hymax 2100,
  - e. Or approved equal.

D. Restrained Flanged Adapter

- 1. Restraint shall be accomplished by use of a gland that incorporates wedges that increase their resistance to pull out as pressure or external forces increase.
- 2. The restrained flange adapter shall be comprised of two rings made of ductile iron conforming to ASTM A536.
- 3. The restraining ring shall be suitable for flanges conforming to AWWA C115 flange drilling.

4. Nuts and bolts shall be fluorocarbon coated or Type 304 stainless steel, high strength, low alloy.
5. Torque limiting twist off nuts shall be used to insure the proper actuation of the wedges. When the nut is sheared off, a standard hex head shall remain.
6. Provide fusion bonded epoxy coating on the gasket ring and shop primer on the body.
7. Restrained flange adapter shall be suitable for use on ductile iron pipe.
8. Manufacturer:
  - a. EBAA Iron, Series 2100 Megaflange,
  - b. Or approved equal.

E. Repair Clamps

1. Repair clamps shall be full circle, 18-8 type 304 stainless steel single band provided in minimum length of 12-inches unless otherwise specified. Bands are to be single section for sizes to 12 inches and double sections for sizes over 12 inches.
2. Nuts and bolts shall be Type 304 stainless steel or fluorocarbon coated.
3. Ductile iron lugs shall be field removable.
4. Repair clamps with a separate keeper bar will not be accepted nor repair clamps with two bolts on a 7.5 inch full circle clamp.
5. Grade 60 gasket.
6. When ordered, provide tapped repair clamps with stainless steel outlet taps for corporation stops in CC (AWWA) thread.
7. Manufacturer:
  - a. Smith-Blair, Style 226, for sizes to 12 inches,  
Smith-Blair, Style 227, for sizes over 12 inches,  
Smith-Blair, 238 and 239 for tapped clamps,
  - b. Dresser, Style 360,
  - c. Ford, Style F1, for sizes to 12 inches,  
Ford, Style F2, for Sizes over 12 inches,
  - d. Or approved equal.

F. Joint Clamps

1. Joint clamps shall be furnished to permanently stop or prevent leaks through the jointing materials of bell and spigot joints.
2. Clamp shall be fully adjustable to provide a close fit on the bell and spigot and shall be designed to be installed on pipes without interruption of water service.
3. Manufacturers standard rubber gasket shall shut the leak off when compressed by the spigot ring drawn up, in turn, by bolts connected to a bell ring.

4. Manufacturer:
  - a. Smith-Blair, Style #274,
  - b. Dresser, Style 160,
  - c. Or approved equal.

G. Service Saddles

1. Service saddles for iron, asbestos-cement pipe or Polyvinyl Chloride (PVC) pipe shall be of the double strap style.
2. Bodies shall be brass alloy conforming to ASTM B62 (85-5-5-5) and a threaded outlet conforming to AWWA C800.
3. Straps shall be high quality silicon bronze, flattened to provide a wider bearing surface to the pipe.
4. Nuts shall be brass alloy as per ASTM B62.
5. Gasket shall be Buna-N rubber in accordance with ASTM D2000.
6. Manufacturer:
  - a. Smith-Blair, Style 323,
  - b. Ford, Style 202B,
  - c. Or approved equal.

H. Services Fittings: Bronze Unions, Couplings and Adapters

1. General
  - a. Service fittings shall have a body cast from corrosion resistant bronze in accordance with ASTM B62 (85-5-5-5).
  - b. Connections shall meet applicable sections of AWWA C-800 and be suitable for flared connection to type K copper pipe.
2. Manufacturer:
  - a. Unions, copper to copper, three parts:
    - 1) Mueller Co #H-15400,
    - 2) Ford C22-XX,
    - 3) Or approved equal.
  - b. Unions, copper to copper, two parts:
    - 1) Mueller Co #H-15405,
    - 2) Ford C02-XX,
    - 3) Or approved equal.
  - c. Eight bend coupling with gasket:
    - 1) Mueller Co #H-15063,
    - 2) Ford LA02-XX,
    - 3) Or approved equal.
  - d. Quarter bend coupling with gasket:
    - 1) Mueller Co #H-15068,
    - 2) Ford L02-XX,
    - 3) Or approved equal.

- e. Straight male adapter:
  - 1) Mueller Co #H-15425,
  - 2) Ford C28-XX,
  - 3) Or approved equal.
- f. Straight female adapter:
  - 1) Mueller Co #H-15450,
  - 2) Ford C21-XX,
  - 3) Or approved equal.

I. Water Meter Couplings, Flanges and Gaskets

- 1. Water Meter Coupling:
  - a. Meter couplings shall be bronze hex body with iron pipe thread and bronze nut drilled for wire seal.
  - b. Manufacturer:
    - 1) Ford #C38 Body Style A,
    - 2) Or approved equal.
- 2. Water Meter Flanges:
  - a. Meter flanges shall be bronze, tapped for iron pipe or have male iron pipe thread.
  - b. Manufacturer:
    - 1) Ford #6F or M; and, Ford #7F,
    - 2) Or approved equal.
- 3. Water Meter Gaskets:
  - a. Gaskets shall be 1/8-inch thick, not reinforced rubber.
  - b. Manufacturer:
    - 1) Ford: #GT120R, #GT140 and #GT141,
    - 2) Or approved equal.

J. Water Meter Tile Set

- 1. The water meter tile set shall be rigid PVC, high insulating “R” value body meter box specially designated for buried meter applications.
- 2. The water meter tile set shall be designed such that the meter is easily accessible and braced for additional stabilization. No bottom is to be provided.
- 3. A closed-cell insulation pad or a double lid cover system shall be provided to prevent freezing.
- 4. The water meter tile set shall be suitable for a minimum depth of cover of 5 feet over the water service tubing.
- 5. A locking cast iron lid shall be furnished for each tile set.
- 6. The water meter tile set shall be furnished complete with male I.P. thread inlet and outlet connections, full port angle key at meter inlet, dual check valve at meter outlet, coupling and fittings ready for a complete meter installation.
- 7. Manufacturer:
  - a. Mueller/McCullough Thermo Coil Meter Box,

- b. Ford Pit Setter – PD VHH-188-18-60 for  $\frac{5}{8}$ -inch x  $\frac{3}{4}$ -inch meters, Ford Pit Setter – PD VHH-488-20-60 for 1-inch meters,
    - c. Or approved equal.
  
- K. 1  $\frac{1}{2}$ -inch and 2-inch Water Meter Tile Set.
  - 1. The water meter tile set shall be suitable diameter to allow for 1  $\frac{1}{2}$ -inch and 2-inch meters and shall be constructed of rigid PVC specially designated for buried meter applications.
  - 2. The water meter tile set shall be designed such that the meter is easily accessible and braced for additional stabilization. No bottom is to be provided.
  - 3. The water meter tile set shall be suitable for a minimum depth of cover of 5 feet over the water service tubing.
  - 4. A locking cast iron lid shall be furnished for each tile set. An insulation pad or double lid arrangement shall be provided to prevent freezing.
  - 5. The water meter tile set shall be furnished complete with male I.P. thread inlet and outlet connections, angle key valve at meter inlet, angle key valve at meter outlet, bypass piping with ball valve, flanged meter couplings, and fittings ready for a complete meter installation.
  - 6. Manufacturer:
    - a. Mueller/McCullough EZ-Vault Meter Setter,
    - b. Ford Pit Setter-PMBB-688-36HB-60 for 1  $\frac{1}{2}$ -inch meters, Ford Pit Setter-PMBB-788-36HB-60 for 2-inch meters,
    - c. Or approved equal.
  
- L. Corporation Stops
  - 1. Corporation stops shall be furnished with bronze stem, washer, nut, body and key.
  - 2. Corporation stops shall be threaded to conform to AWWA C800 with standard corporation stop thread at the inlet. The outlet shall be fitted with coupling nut for flared tube service unless otherwise specified.
  - 3. Components shall be suitable for operating pressure meeting or exceeding AWWA C-800 criteria for high pressure application.
  - 4. Manufacturer:
    - a. Mueller: copper outlet, #B25000, for sizes  $\frac{3}{4}$ -inch through 1-inch, Mueller: copper outlet, #B25020, for sizes over 1-inch,
    - b. Ford: copper outlet, FB600, for sizes  $\frac{3}{4}$ -inch through 1-inch, Ford: copper outlet, FB600 with L02, for sizes over 1-inch,
    - c. Or approved equal.
  
- M. Curb Stops
  - 1. Curb stops shall be manufactured in accordance with AWWA C-800 and shall have all brass components conforming to 85-5-5-5 ASTM B62.
  - 2. Curb stops shall be ball type, quarter turn to open or close, and shall be suitable for potable water service buried application.

3. Components shall be suitable for operating pressure meeting or exceeding AWWA C-800 criteria for high pressure application.
4. Manufacturer:
  - a. Mueller:
    - 1)  $\frac{3}{4}$ -inch through 2-inch copper to copper: B2504.
    - 2)  $\frac{3}{4}$ -inch through 2-inch copper to iron: B25174.
  - b. Ford:
    - 1)  $\frac{3}{4}$ -inch through 2-inch copper to copper: B22.
    - 2)  $\frac{3}{4}$ -inch through 2-inch copper to iron: B21,
  - c. Or approved equal.

N. Curb Boxes

1. Curb boxes shall be high quality cast-iron castings suitable for H20 loadings.
2. Boxes shall be two-piece adjustable depth with arch pattern base. An extension stem will not be allowed.
3. Valve box covers shall be marked "water" and shall be cast iron with a brass pentagon plug.
4. Manufacturer:
  - a. Bibby-LaPerle:
    - 1) For  $\frac{3}{4}$ -inch and 1-inch; 2  $\frac{1}{2}$ -inch shaft: V-009, size 95E,
    - 2) For 1 $\frac{1}{2}$ -inch and 2-inch; 4  $\frac{1}{4}$ -inch shaft: V-425, size 145R,
  - b. Hays,
  - c. Mueller,
  - d. Clow - a division of McWane, Inc.,
  - e. Tyler - a division of McWane, Inc.,

O. Valve Boxes

1. Valves installed in the ground shall be equipped with an adjustable screw type valve box, minimum 1 foot adjustment.
2. The valve box shall have a barrel with a base to fit the valve on which it is to be installed.
3. Valve boxes for gate valves shall be three piece screw type, 5  $\frac{1}{4}$ " shaft with No. 6 base and a valve box cover.
4. Valve boxes for butterfly valves shall be as noted above but without the base.
5. Valve boxes shall be high quality cast-iron castings suitable for HS-20 loadings.
6. All valve box parts must be compatible and interchangeable with Buffalo Pipe and Foundry Corp. valve boxes.
7. Valve box covers shall be marked "water" and shall fit properly in the barrel without movement.
8. Manufacturer:
  - a. Bibby-LaPerle, (Figure V619 #CC),
  - b. Hays,

- c. Tyler - a division of McWane, Inc.,
- d. Sigma

P. Insulation

1. Materials

- a. Watermain, valves, water service piping and fittings and other appurtenances installed where depth of bury is less than 54 inches (4 feet, 6 inches) or where shown on the drawings, shall be fully wrapped with a closed cell polystyrene insulation.

2.02 PAINTING

A. Shop Painting

- 1. Clean and prime coat ferrous metal surfaces.
- 2. All interior wetted ferrous surfaces of valves and appurtenances except finished or bearing surfaces shall be shop-painted with an approved epoxy paint system certified to NSF/ANSI Standard 61 for potable water and applied in accordance with the paint system manufacturer's recommendations.
- 3. Coat machined, polished and non-ferrous surfaces including gears, bearing surfaces and similar unpainted surfaces with corrosion prevention compound listed in NSF/ANSI Standard 61 and applied in accordance with the manufacturer's recommendations. Maintain coating during storage and until equipment begins operation.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install piping specialties and accessories as shown on the Drawings and in accordance with the applicable requirements of Section 15051, Buried Piping Installation.

END OF SECTION

## SECTION 15140

### TESTING AND DISINFECTION

#### PART 1 - GENERAL

##### 1.01 DESCRIPTION

- A. Work Specified
  - 1. Testing and disinfection of all pressure piping for leakage as specified.
    - a. The CONTRACTOR shall furnish all labor, equipment, test connections, vents, water and materials necessary for carrying out the pressure and leakage tests as specified and required.
    - b. The work specified shall include all labor, material, equipment, services and incidentals necessary to fill, clean, chlorinate, flush, and test all pipelines which will carry or hold potable water.
- B. Related Work Specified Elsewhere
  - 1. Section 15051 - Buried Piping Installation
  - 2. Section 15106 - Ductile Iron Pipe and Fittings
  - 3. Section 15110 - Valves and Appurtenances
  - 4. Section 15120 - Piping Specialties and Accessories
- C. Description
  - 1. Permission shall be obtained from the OWNER of the water system before the use of water from any existing system. The CONTRACTOR shall:
    - a. Conform to the requirements of the OWNER.
    - b. Pay all costs connected with the taking or use of water for any retesting.
    - c. The CONTRACTOR shall provide written notice to the Authority and ENGINEER at least three working days in advance of testing and disinfection.
  - 2. All work under this section shall be performed in the presence of the ENGINEER. A representative of the public health authority having jurisdiction must also be present, as required.
  - 3. Chlorination shall be scheduled such that sampling and flushing will be performed during normal business hours.

##### 1.02 QUALITY ASSURANCE

- A. Reference Standards
  - 1. AWWA B300, Standard for Hypochlorites
  - 2. AWWA B301, Standard for Liquid Chlorine
  - 3. AWWA C104, Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water

4. AWWA C301, Prestressed Concrete Pressure Pipe, Steel-Cylinder Type for Water and Other Liquids
5. AWWA C502, Standard for Dry-Barrel Fire Hydrants
6. AWWA C504, Standard for Rubber Seated Butterfly Valves
7. AWWA C600, Standard for Installation of Ductile Iron Watermains and Their Construction
8. AWWA C651, Standard for Disinfecting Water Mains
9. AWWA C900 Polyvinyl Chloride (PVC) Pressure Pipe, 4-inch Through 12-inch for Water Distribution
10. NSF/ANSI Standard 60 and 61 (as applicable)
11. Standard Methods for the Examination of Water and Wastewater, latest edition
12. 1996 Safe Drinking Water Act

### 1.03 SUBMITTALS

- A. The CONTRACTOR shall submit proposed materials, methods, and operations regarding testing and disinfection to the ENGINEER for review prior to the start of testing.
- B. The CONTRACTOR shall submit certification that all backflow preventers (Reduced Pressure Zone attachments) and pressure gauges have been tested and certified within the last year.
- C. Qualifications of laboratory analyzing biological samples shall be New York State ELAP certified.
- D. Chain-of-Custody forms are to be furnished for all biological samples taken.

## PART 2 - PRODUCTS

### 2.01 MATERIALS

- A. All products must be suitable for use in a potable water system and NSF-60 certified. All piping, valves, etc. shall be NSF-61 certified.
- B. Chlorination shall be by the use of a solution of sodium hypochlorite contained in the pipe or structure as specified. The use of calcium hypochlorite in powdered, granular, or tablet form, shall not be allowed.

## PART 3 - EXECUTION

### 3.01 TESTS ON PRESSURE PIPING FOR POTABLE WATER

#### A. General

1. Flush, test and disinfect prior to connection to existing watermains as specified below, except as otherwise authorized by the ENGINEER.
2. The length of piping and sections included in the tests shall meet the approval of the ENGINEER; however, the length shall not exceed 2,000 feet in any case. Pressure test of pipe section shall be from valve to valve regardless of watermain size.
3. Notify the ENGINEER 72 hours in advance of testing.
4. Equipment in or attached to the pipes being tested shall be protected. Any damage to such equipment during the test shall be repaired by the CONTRACTOR at his expense.
5. Conduct all tests per AWWA C-600 and C-651, latest editions in the presence of the ENGINEER. Repeat tests in the presence of local authorities having jurisdiction if required by them.
6. CONTRACTOR shall have sufficient personnel at the site for the entire duration of all tests.
7. When piping is to be insulated or concealed in a structure, tests shall be made before the pipe is covered.
8. Provide outlets to flush line, expel air and perform specified tests.
9. Where connections to existing lines are called for only one such connection will be allowed.
10. All fittings, hydrants and appurtenances must be properly braced and harnessed before the pressure is applied. Thrust restraining devices which will become a part of the system must also be tested at the test pressure.
11. When testing absorbent pipe materials such as cement or concrete, the pipeline shall be filled with water at least 24 hours before the test is made.
12. The CONTRACTOR must supply all materials and manpower to perform the tests as specified herein.
13. Testing and disinfection shall be acceptable and approved by the agency of jurisdiction before another connection is made.

B. Initial Flushing

1. CONTRACTOR shall fill and flush new main to remove dirt and miscellaneous debris from the inside of the watermain.
2. CONTRACTOR is responsible for removing all entrapped air during flushing.
3. Flushing must have sufficient flowrate to achieve a fluid velocity of 3.0 feet per second inside the waterline.
4. A minimum 2" tap is required for proper flushing of all watermains having a diameter of 8 inches or less, however, multiple taps or larger taps may be required. ENGINEER shall be responsible for determining necessary connections and providing calculations verifying flushing conditions are met.
5. Refer to AWWA C651, for number of taps required to obtain the minimum 3.0 feet per second flow velocity in all pipes.

6. CONTRACTOR is responsible for providing a water source for flushing. With the permission of the OWNER, an existing watermain may be used as a water source, however, the following restrictions apply:
  - a. The CONTRACTOR is not allowed to operate any valves or hydrants or operate any components which belong to the OWNER.
  - b. If water is drawn from the existing system, an appropriate backwater preventer such as a Reduced-Pressure Zone (RPZ) device must be used. The RPZ must be tested within one (1) year and approved prior to usage.
  - c. Water from flushing procedures must be disposed of properly. Water may be piped or gravity-fed to an existing storm sewer with the ENGINEER'S and the OWNER'S permission if proper erosion control methods to minimize sediment build-up are used. Discharge of water into a roadway or into a parking lot is strictly prohibited. Water discharging operations shall not cause damage to any public or private property.
7. CONTRACTOR shall partially open and close valves and hydrants several times under expected line pressure to flush foreign material out of the valves and hydrants.
8. Flushing shall continue until three pipe volumes have passed through the new waterline and the water appears sediment-free.

C. Pressure Test

1. Test pressure shall be as specified in Section 15051, Buried Piping Installation, at the lowest point in the line.
2. Test pressure shall be held on the piping for a period of at least 2 hours, unless a longer period is requested by the ENGINEER or OWNER. Pressure should not fluctuate by more than 5 psi during testing.
3. Pressure gauge must be in good working condition and must be demonstrated to be accurate to the ENGINEER prior to any testing.
4. Gauge must have proper labeling to allow ENGINEER to accurately distinguish the maximum allowable 5 psi change in pressure. Gauge must have markings at no greater than 2 psi increments to allow accurate readings.
5. ENGINEER is responsible for reading the gauge and recording the test results he/she witnesses. Results obtained by the ENGINEER are considered final, and not subject to discussion by the CONTRACTOR.
6. ENGINEER may tap pressure gauge at each reading to ensure needle is measuring pressure accurately.
7. The Seneca Nation reserves the right to read the pressure gauge and record the test results for those lines considered suspect or for potentially inaccurate result recording.
8. ENGINEER shall record pressure at 15 or 30 minute intervals to help determine if the pressure loss is stabilizing.
9. The CONTRACTOR will inform the ENGINEER when to begin the test.

10. If the pressure drop is greater than 5 psi in 2 hours, or if the ENGINEER believes the line is suspect, the CONTRACTOR shall explore for the cause of the excessive leakage and after repairs have been made, the line shall be retested. This procedure shall be repeated until the pressure loss is less than the maximum allowable and the ENGINEER is satisfied.
11. If the pressure drop is 3 psi or greater but less than 5 psi in 2 hours, the CONTRACTOR shall continue the test for another 2 hours. If the pressure drop over the 4 hour period is 5 psi or greater, the test failed and must be repeated after the cause of the leakage is explored and the necessary repairs have been made
12. The ENGINEER shall make a preliminary determination if the test passes or fails based on the pressure and volume losses recorded during testing.
13. After each test, the CONTRACTOR must demonstrate that the test apparatus, including the pressure gauge, is fully functional and accurate. Inaccurate gauges or non-satisfactory equipment will be grounds for test failure, regardless of test results. CONTRACTOR will resupply proper equipment and retest, at his expense.
14. The pressure loss recorded over the 2 or 4-hour test must be acceptable to the County Health Department and the Seneca Nation for final hydrostatic testing approval to be given.
15. At the end of the test, the pressure shall be increased to the starting pressure, so that the leakage test data is acquired. See Section D Leakage Test below, for additional information.

D. Leakage Test

1. The leakage test shall be conducted concurrently with the pressure test.
2. The rate of leakage shall be determined at 15-minute intervals by means of volumetric measurement of the makeup water added to maintain the test pressure. The test shall proceed until the rate of leakage has stabilized or is decreasing below an allowable value, for three consecutive 15-minute intervals. After this, the test pressure shall be maintained for at least another 15 minutes.
  - a. At the completion of the test the pressure shall be released at the furthestmost point from the point of application.
3. All exposed piping shall be examined during the test and all leaks, defective material or joints shall be repaired or replaced before repeating the tests.
4. The leakage for pressure pipelines shall not exceed the following allowable rates in gallons per hour per 1000 feet of pipe at the test pressure specified in Section 15051, Buried Piping Installation:

<u>Pipe Diameter</u>	<u>Pipe Material</u>	<u>Allowable Leakage*</u>
4"	PVC, DI	0.29

6"	PVC, DI	0.44
8"	PVC, DI	0.59
10"	PVC, DI	0.74
12"	PVC, DI	0.88
16"	DI, PCCP	1.17
20"	DI, PCCP	1.47
24"	DI, PCCP	1.76

\* 75% of allowable leakage per AWWA C600, rev.99.

5. Regardless of the above allowables, any visible leaks shall be permanently stopped.
6. The CONTRACTOR shall provide a meter certified within the last year or a source-water tank/barrel of small enough cross section so that measurable changes in water depth can be accurately recorded. A two hour test is permitted for circular tanks/barrels of 15 inches in diameter or less. A four hour test is required for circular tanks/barrels greater than 15 inches in diameter. If a tank of non-circular cross section or irregular shape is used, and the change in water depth cannot be properly measured, the ENGINEER or the Seneca Nation may require the test to be run more than 2 hours until an accurate depth change can be recorded and the ENGINEER is satisfied with the results.
7. The leakage volume recorded over the 2 or 4-hour test must be acceptable to the County Health Department and the Seneca Nation for final waterline approval to be given.

### 3.02 BUTTERFLY VALVE TESTING

- A. Each butterfly valve shall have a field leakage test performed with the pressure differential as identified in Section 15051, Buried Piping Installation, applied in both directions. This requirement does not waive the requirements stipulated in AWWA C504.
- B. The duration of each field test in each direction shall be a minimum of two (2) hours.
- C. The CONTRACTOR shall demonstrate to the ENGINEER' S satisfaction that all system components operate correctly, both individually and as a system. All testing equipment and materials required to perform all tests shall be provided by the CONTRACTOR and demonstrated as functional and accurate to the ENGINEER. Non-functional or inaccurate equipment, regardless of test results, will be grounds for test failure. CONTRACTOR shall resupply proper equipment and retest.

### 3.03 RESILIENT SEAT GATE VALVE TESTING

- A. Each gate valve shall have a field leakage test performed with the pressure differential as identified in Section 15051, Buried Piping Installation, applied in both directions. This requirement does not waive the requirements stipulated in AWWA C509.
- B. The duration of each field test in each direction shall be a minimum of two (2) hours unless specifically defined by the ENGINEER.
- C. The CONTRACTOR shall demonstrate to the ENGINEER'S satisfaction that all system components operate correctly, both individually and as a system. All testing equipment and materials required to perform all tests shall be provided by the CONTRACTOR and demonstrated as functional and accurate to the ENGINEER. Non-functional or inaccurate equipment, regardless of test results, will be grounds for test failure. CONTRACTOR will resupply proper equipment and retest.

### 3.04 TAPPING SLEEVE AND VALVE TESTING

- A. Prior to making the tap, gate valves shall have a field leakage test performed with a hydrostatic pressure as identified in Section 15051, Buried Piping Installation, on the open end.
- B. Once the system is complete, the valves shall be tested in accordance with the Butterfly and Resilient Seat Gate Valve Testing criteria stated above.
- C. The duration of each field test shall be a minimum of two (2) hours unless specifically defined by the ENGINEER.
- D. After installation of the tapping sleeve or saddle and prior to tapping the main, the sleeve or saddle shall be air tested in accordance with manufacturers' recommendations. If the results of the air test do not meet manufacturers' specifications, the sleeve or saddle will be replaced and retested until the results are satisfactory.
- E. The CONTRACTOR shall demonstrate to the ENGINEER'S satisfaction that all system components operate correctly, both individually and as a system. All testing equipment and materials required to perform all tests shall be provided by the CONTRACTOR and demonstrated as functional and accurate to the ENGINEER. Non-functional or inaccurate equipment, regardless of test results, will be grounds for test failure. CONTRACTOR will resupply proper equipment and retest.

### 3.05 DISINFECTION

- A. Before disinfection, the line shall be cleaned and flushed with clean water as defined in the Initial Flushing section. CONTRACTOR shall provide outlets as required.
- B. The chlorine solution shall be admitted to pipelines through corporation stops placed in the horizontal axis of the pipe, to structures by means of tubing extending directly into the structure or other approved methods.
- C. CONTRACTOR shall install 2-inch saddles on existing and proposed mains and run 2-inch Type K copper tubing with backflow prevention device to allow for addition of chlorinated water. The rate of chlorine solution flow shall be in such proportion to the rate of water entering the pipe or structure that the resulting free chlorine residual shall be between 50 and 100 milligrams per liter (mg/l). Concentrations over 100 mg/l shall not be allowed to enter the piping system.
- D. The placement of chlorine powder or tablets inside the pipe during installation as a means of disinfection will not be allowed.
- E. The proposed piping shall be tested in all respects, prior to connecting the second end of the pipe to the existing system and prior to installing the annular fill at casing pipes.
- F. All valves to existing mains must be closed during the chlorination process. CONTRACTOR must flush the proposed main through a backflow preventer such as a Reduced Pressure Zone (RPZ) and 2-inch copper until chlorine residual at the opposite end reaches 50 mg/l. All valves to the existing water network are to remain closed until this level is reached. While the chlorinated water is being added, all appurtenances on the main shall be operated so as to completely disinfect the new work. The operation shall be repeated as necessary to provide complete disinfection.
- G. Chlorinated water from hydrants and taps must be properly collected and disposed of by the CONTRACTOR. Discharge of chlorinated water into the existing storm sewer or a natural water body shall not be allowed.
- H. The chlorine treated water shall be retained in the pipe or structure at least 24 hours, unless otherwise directed. During the retention period all valves and hydrants within the treated sections shall be operated.
- I. The chlorine residual shall be not less than 25 mg/l at any point in the pipe or structure at the end of the retention period. CONTRACTOR shall immediately perform final flushing to reduce the retention time high levels of chlorinated water.

- J. When making repairs to or when specified, structures and portions of pipelines shall be chlorinated by a concentrated chlorine solution containing between 200 mg/l and 300 mg/l of free chlorine. The solution shall be applied with a brush or sprayed on the entire inner surface of the empty pipes or structures. The surfaces disinfected shall remain in contact with the strong chlorine solution for at least 30 minutes.
- K. The CONTRACTOR must use an approved test method, as defined in AWWA C651 and *Standard Methods for the Examination of Water and Wastewater*, to determine chlorine levels. Test strips and test kits will be allowed for testing chlorine levels if the kit is less than six months old, in the original bottle, is not past the expiration date, and has a color coded scale on the side with legible concentrations defined. ENGINEER and the Seneca Nation reserve the right to reject test results if the test strip or kit is suspect. Sending samples to an approved laboratory is also acceptable.

### 3.06 FINAL FLUSHING

- A. Upon completion of each disinfecting operation, the CONTRACTOR will be required to empty the contents of the pipe into a tank truck. Dumping into a sewer will only be allowed with approval from the local governing body. In no instance will chlorinated testing or flushing water be emptied onto the roadways, in ditches, culverts, streams, wetlands, or any other natural water body.
- B. Final flushing will continue until such time as the chlorine residual is between 0.5 and 1.2 mg/l.
- C. Prior to discharging into storm or sanitary sewer systems, and with the written approval of the municipality, the CONTRACTOR shall use a reducing agent (such as sodium thiosulfate) to neutralize any chlorine residual. CONTRACTOR shall prove to the ENGINEER, the Seneca Nation and municipality that the water has been properly neutralized prior to discharge using an appropriate testing method.

### 3.07 BACTERIOLOGICAL TESTING

- A. After disinfection and final flushing, a representative of the laboratory hired by the CONTRACTOR shall, in the presence of the ENGINEER, take two bacteriological samples from sampling points at maximum 1,000-foot intervals along the waterline, at every branch off the main line, and at each end of the test section (one immediately after final flushing and a second one after 24 hours) for testing by an ELAP certified laboratory in accordance with the latest Health Department requirements.
- B. Should acceptable results not occur after these two consecutive tests, the CONTRACTOR shall, at his expense, repeat the disinfection procedure until safe results are obtained.

- C. All precautions shall be taken to maintain dry and sanitary conditions and to prevent contamination of any piping, at the CONTRACTOR'S expense.
- D. If, in the opinion of the ENGINEER or the Seneca Nation, contamination has occurred, the CONTRACTOR shall repeat the disinfection and bacteriological testing at his cost and expense.
- E. Test results from the laboratory shall be sent directly to the ENGINEER. Test results sent through the CONTRACTOR shall not be considered.
- F. Bacteriological test results shall expire 30 calendar days after the samples are taken. After 30 calendar days, the CONTRACTOR shall be required to repeat the process, taking two sets of samples and submitting results for review.
- G. As per AWWA C651-14 standards, the limit for pipe installed without bacteriological samples being taken is 20 linear feet.

### 3.08 APPROVAL

- A. Once approval is given, after reconnecting the proposed piping to the existing piping, the CONTRACTOR shall slowly refill the watermain with water and allow it to pressurize so that the ENGINEER may inspect the connections and/or other piping.
- B. The CONTRACTOR shall, at his expense, correct any observed defects to the satisfaction of the ENGINEER and OWNER.

END OF SECTION