

CITY OF ELYRIA, OHIO
DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION

PROJECT SPECIFICATIONS

FOR

**CITY OF ELYRIA
OVERBROOK PUMP STATION II**

Chris Pyanowski
Safety-Service Director

Kathy McKillips, P.E.
City Engineer

Signature:

Date: 08/14/2024

SUBMITTED BY AECOM

TABLE OF CONTENTS

Invitation to Bid	4-5
Instructions to Bidders	6-15
Agreement Form	16-25
Notice to Commence Work	26
Finance Director's Certification of Funds	27
Resolution of Directors	28
Bid Form	29-39
Bid Guaranty and Contract Bond	40
Consent of Surety	41
Bidder's Insurance Agent's Affidavit	42
Bidder's Insurance Certificate	43
Tax Affidavit	44
Bidder's Affidavit	45
Equal Employment Opportunity Clause	46-47
Contractor's/Vendor's Affirmative Action Information Sheet	48
Contractor/Supplier Affirmative Action Program	49
Supplementary Conditions	50-51
Standard General Conditions (EJCDC C-700)	Attached
Requirements for Federally Funded Projects	Attached
Geotechnical Memorandum	Attached

DETAILED SPECIFICATIONS

DIVISION 1 – GENERAL REQUIREMENTS

01 10 10	SUMMARY OF WORK
01 14 14	CONTROL OF WORK
01 29 01	MEASUREMENT AND PAYMENT
01 32 17	CONSTRUCTION PROGRESS SCHEDULES
01 32 31	PRE & POST-CONSTRUCTION INSPECTIONS
01 33 00	SUBMITTALS
01 35 43	PROTECTION OF ENVIRONMENT
01 43 00	QUALITY REQUIREMENTS
01 50 00	TEMPORARY FACILITIES
01 66 10	DELIVERY, STORAGE AND HANDLING
01 74 23	CLEANING UP
01 77 00	CONTRACT CLOSEOUT
01 78 36	WARRANTIES AND BONDS

DIVISION 26 – ELECTRICAL

26 00 00	ELECTRICAL
26 32 13	ENGINE-GENERATOR SYSTEMS

DIVISION 31 – EARTHWORK

31 10 00	SITE CLEARING AND PREPARATION
31 23 16	ROCK EXCAVATION AND DISPOSAL
31 23 19	CONTROL OF WATER
31 23 33	TRENCH EXCAVATION AND BACKFILL
31 80 00	PROTECTION OF STRUCTURES

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 12 00	ASPHALT PAVING
32 16 00	CURBS RAMPS APRONS AND SIDEWALKS
32 90 10	SITE RESTORATION AND LANDSCAPING

DIVISION 33 – UTILITIES

33 01 35	MAINTENANCE, SUPPORT, AND RESTORATION OF UTILITY FACILITIES
33 26 50	PVC OPEN CUT SEWER PIPE
33 26 50	PACKAGED UTILITY WASTEWATER PUMPING STATION INSTALLATION

DIVISION 40 – PLANT AND EQUIPMENT

40 23 19.05	PROCESS PIPING AND APPURTENANCES
43 21 16	SUBMERSIBLE CHOPPER PUMP INSTALLATION

INVITATION TO BID

Sealed bids for a unit price contract will be received by the City of Elyria, Ohio, until **2:00 PM** local time on **Thursday, September 5, 2024** for the project known as:

OVERBROOK PUMP STATION II

The bids are to be delivered to the **Office of the Engineer, Elyria City Hall, 131 Court Street, Elyria, Ohio 44035**. All bids received will then be opened and read at a public bid-opening meeting.

DESCRIPTION OF WORK: The Contractor shall furnish all labor, equipment, supplies, and supervision of labors necessary to complete the work. This project includes the replacement of 853 linear foot of 8-inch sanitary sewer with 10-inch sanitary sewer from the force main discharge to the interceptor on Gulf road. Installation of a new lift station, including back-up power (lift station and back-up generator procured by the City). A new 270 linear foot 4-inch force main will be installed to convey flow to the new 10-inch gravity main. An existing 880 LF 4-inch force main will be upsized to 6-inch.

BIDDING DOCUMENTS: The plans, specifications, and all bidding forms may be examined at the City of Elyria Website, <http://www.cityofelyria.org/bids-requests/>, go to “Current Bids”. Bidders SHALL request the electronic copy of the bid package by sending their request to kmckillips@cityofelyria.org in order to be placed on the Planholders List.

PROJECT RELATED QUESTIONS: Questions related to the project will be accepted until 5:00 P.M. on Wednesday, August 28, 2024.

BID SECURITY: The bid must be accompanied by a bid guaranty. The bid guaranty must meet all requirements of Section 153.54 of the ORC and the Instructions to Bidders.

BUY OHIO: All contractors and subcontractors involved with the project will, to the extent practicable, use Ohio products, materials, services, and labor in the implementation of this project.

COMPLETION TIME: The contractor will have 102 days from the date of the Notice to Commence Work to complete Consent Decree Related Work which consists of installation of the pump station, installation of the new 4-inch force main, and upsizing of the 8-inch sanitary sewer to 10-inch. All Consent Decree Related Work shall be completed by December 31, 2024. The contractor will have 253 days from the date of the Notice to Commence Work to complete remaining work which consists of replacing the existing 4-inch forcemain with a new 6-inch forcemain, and restoration. All remaining Work shall be completed by May 31, 2025.

PREVAILING WAGES: The contractor and any subcontractor must comply with the prevailing wage rate requirements on public improvements as determined by the Secretary of Labor in accordance with Federal-Aid requirements. Wage rates are set forth in the U.S. Department of Labor wage decision No. OH20230001 dated September 1, 2023 and can be found at website <http://www.wdol.gov/dba.aspx>. **Please note it is the Contractor’s responsibility to be aware of current wage rates for public improvements in Lorain County.**

COMPLIANCE WITH ALL LAWS: All work shall be carried out in compliance with all federal, state and local laws, rules and regulations that apply to the work. Any project specification item in

CITY OF ELYRIA OVERBROOK PUMP STATION II

conflict with a federal, state, or local law, rule or regulation, shall be void.

AFFIRMATIVE ACTION: All bidders must comply with the provisions of Chapter 167 of the Elyria Codified Ordinances as amended. Bidders must be pre-certified or submit an acceptable Affirmative Action Plan with the bid submission. No contract will be awarded unless an acceptable Affirmative Action Plan is reviewed by the EEO Office, approved and incorporated into the contract. Each bidder must complete and sign the Elyria Equal Opportunity Clause, which is included with the specifications.

PROPOSAL FORMS: No proposal will be considered unless it is made on the blanks furnished by the City. No bidder shall take any exception to any requirement of the specifications. Each proposal must contain the full name of the party or parties submitting the proposal and all persons interested therein.

AWARD OF CONTRACT: The City reserves the right to waive any technicalities or informalities, to reject any or all bids received, and to accept any bid with any combination of alternates which is deemed most favorable to the City of Elyria, Ohio at the time and under the conditions stipulated in the project documents.

Published by order of:
Mayor Kevin Brubaker

Chronicle-Telegram: Thursday August 15, 2024, one (1) proof

INSTRUCTIONS TO BIDDERS

1. ORDINANCE

- 1.1 The bids for this project are being taken in accordance with Ordinance No. 2024-80 passed by the Elyria City Council on May 6, 2024.

2. DEFINED TERMS

- 2.1 Except as given in Section 2.2 herein, the terms used in these Instructions to Bidders which are defined in the General Conditions and have the meanings assigned to them in Section 1.01 of the noted General Conditions.

- 2.2 Additional terms used in these Instructions to Bidders are defined as follows:

SUCCESSFUL BIDDER - the lowest and best, responsible, and responsive bidder to whom the City (on the basis of the City's evaluation as hereinafter provided) makes an award.

UNDERGROUND FACILITIES - All pipes, conduits, ducts, cables, fiber optic cables, wires, service connections, manholes, closeouts, valves, vaults, pull boxes, tanks, tunnels, culverts or other such facilities or attachments, and encasements containing such facilities privately or publicly owned which have been installed underground to furnish any of the following services or materials: electricity, gas, steam, liquid petroleum products, street lighting, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems, or water.

WORK - The entire completed construction or the various separately identifiable parts thereof required to be furnished under the contract documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the contract documents.

3. COPIES OF BIDDING DOCUMENTS

- 3.1 Complete sets of the bidding documents may be purchased as described in the Invitation to Bid. No refund will be made for returned documents.
- 3.2 Complete sets of bidding documents must be used in preparing bids; the City does not assume any responsibility for errors or misinterpretations resulting from the use of an incomplete set of bidding documents.
- 3.3 The City in making copies of the bidding documents available on the above terms does so only for the purpose of obtaining bids for the work and does not confer a license or grant permission for any other use of the bidding documents.

4. QUALIFICATIONS OF BIDDERS

- 4.1 To demonstrate qualifications to perform the work, each bidder must be prepared to submit within five (5) days after the bid opening, upon the City's request, detailed written evidence

CITY OF ELYRIA OVERBROOK PUMP STATION II

such as financial data, previous experience, present commitments and other such data as may be needed to demonstrate the bidder's qualifications.

- 4.2 Each bidder must be qualified to do business in the State of Ohio, or must obtain such qualification prior to award of the contract by the City.

5. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

- 5.1 It is the responsibility of each bidder before submitting a bid:

5.1.1 To examine thoroughly the contract documents and other related data identified in the bidding documents. Documents are available for review in the City of Elyria Engineering Department;

5.1.2 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 the furnishing of the work;

5.1.3 To consider federal, state and local laws and regulations that may affect cost, progress, performance, or the furnishing of the work;

5.1.4 To study and carefully correlate bidders knowledge and observations with the contract documents, and other related data;

5.1.5 To promptly notify the Engineer of all conflicts, errors, ambiguities or discrepancies which bidder has discovered in or between the contract documents and other related documents or observations.

5.1.6 To evaluate the condition, layout and nature of the project site and surrounding area;

5.1.7 To consider the availability and cost of labor;

5.1.8 To consider the availability and cost of materials, supplies and equipment;

5.1.9 To consider the cost of temporary utilities required in the bid;

5.1.10 To consider the cost of any permit or license required by a local or regional authority having jurisdiction over the project;

5.1.11 To consider the generally prevailing climatic conditions; and

5.1.12 To evaluate conditions bearing upon transportation, disposal, handling, and storage of materials.

5.2 All notices of conflicts, errors, ambiguities or discrepancies submitted by a bidder to the Engineer must be in writing and should be given at least seven (7) days prior to the bid opening. The Engineer will respond to such notices received in time, by sending an addendum to all holders of the plans and specifications.

5.3 Any reports of exploration and tests of subsurface conditions at or contiguous to the site which have been utilized by the Engineer in preparation of the contract documents are

CITY OF ELYRIA OVERBROOK PUMP STATION II

identified in the Supplementary Conditions. The bidder may rely upon the general accuracy of the "technical data" contained in such report but not upon other data, interpretations, opinions or information contained in such reports or otherwise related to the subsurface conditions at the site, nor upon the completeness thereof for the purpose of bidding or constructing the project, but the City is not responsible for the accuracy thereof.

- 5.4 The City may have record drawings of previous projects constructed in the past, in part or the entire site where this project is to be constructed. The bidder may examine these drawings, if available.
- 5.5 The bidder may purchase copies of the reports noted in Section 5.3 and of the drawings noted in Section 5.4 for the cost of reproduction as established by City Ordinance or by the firm printing the bid documents. Those reports and drawings are not part of the contract documents. The bidder is responsible for any interpretation or conclusion drawn from any technical data, opinions or other information contained in or developed from such reports or drawings.
- 5.6 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 the work, or which relates to any aspect of the means, methods, techniques, sequences, or procedure of construction to be selected and employed by bidder and all safety precautions and programs incidental thereto or which bidder deems necessary to determine its bid for the performing and furnishing the work in accordance with time, price, and other terms and conditions of the contract documents.
- 5.7 On request, the City will grant permission to each potential bidder, access to the site (by issuing a no fee excavation permit, except a fee will be required if pavement is to be cut) to conduct such examination, investigation, exploration, tests and studies as each bidder deems necessary for submission of a bid. Bidders must fill all test holes and clean up and restore the site to its former condition upon completion of such explorations, investigation, tests and studies.
- 5.8 The general nature of any work scheduled to be performed at the project site by the City, or by another prime contractor working for the City, and by any utility (if known by the City) that relates to the work for which a bid is to be submitted, is included as information in the Supplementary Conditions.
- 5.9 The submission of a bid will constitute an incontrovertible representation by bidder that bidder has complied with every requirement of this Article 5, and 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 selected by the bidder to complete the project as expressly required by the contract documents, that the bidder has given the Engineer written notice of all conflicts, errors, ambiguities and discrepancies that bidder has discovered (if any) in the contract documents in time for an addenda to be issued to all plan holders, and that the written resolutions thereof issued by the Engineer as an addenda is acceptable to the 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.

6. AVAILABILITY OF LAND FOR WORK

- 6.1 The lands upon which the work is to be performed, the right-of-way and easements, and access thereto and other lands designated for use by the 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 the contractor.
- 6.2 All easements and/or right-of-way for permanent structures or permanent changes in existing facilities have been obtained and paid for by the City unless otherwise provided in the Supplementary Conditions.
- 6.3 Any special condition set forth in easements obtained by the City, which may affect the performance or furnishing the work, if any, are identified in the Supplementary Conditions.

7. INTERPRETATIONS AND ADDENDA

- 7.1 All questions about the true meaning or intent of the bidding documents are to be directed to the Engineer in writing. Interpretations or clarifications considered necessary by the Engineer in response to such questions will be issued by addenda, either mailed, faxed, emailed or hand delivered to all parties recorded by the Engineer as having received the bidding documents or attended the pre-bid meeting.
- 7.2 An addendum may also be issued by the Engineer to modify the bidding documents as deemed advisable by the City.
- 7.3 A bidder may not rely upon any interpretation of the bidding documents by any means other than a written addendum.

8. BID SECURITY

- 8.1 Each bid must be accompanied by a bid guarantee. The bid guarantee may be a **Bid/Contract Bond**, a **Certified Check**, a **Cashier's Check** or a **Letter of Credit**. The bid guarantee shall meet all requirements of Section 153.54 of the Ohio Revised Code and any additional requirements stated herein.
- 8.2 Any bond shall be furnished by a surety company licensed to conduct business in the State of Ohio. Any check used as bid security shall be drawn on a solvent bank.
- 8.3 Any **Bid/Contract Bond** submitted shall be for the full amount of the base bid plus the highest combination of additive alternates, if any. The form of the **Bid/Contract Bond** shall be of substantially the same form as provided in Section 153.571 of the Ohio Revised Code and it shall serve as both a bid bond and a contract bond. If stated, the amount of the **Bid/Contract Bond** shall be specified in figures. Specifying the amount of the bond as a percentage or one hundred percent (100%) is **not** acceptable.
- 8.4 Section 3905.41, Ohio Revised Code, may require that a **Bid/Contract Bond** be

countersigned by an Ohio resident agent. It is the bidder's responsibility to determine the applicability of Section 3905.41, Ohio Revised Code.

- 8.5 Any **Certified Check, Cashier's Check** or a **Letter of Credit** submitted shall be made payable to the City of Elyria, Ohio, and shall be for an amount of not less than ten percent (10%) of the sum of the base bid plus the highest combination of additive alternates, if any. The amount shall be stated in figures. Any **Certified Check, Cashier's Check** or a **Letter of Credit** submitted shall be accompanied by an executed Consent of Surety form. Any letter of credit shall be revocable only by the City. If the successful bidder used a certified check, cashier's check or letter of credit, it will be returned upon provision of the **Contract Bond** required by Section 153.54, Ohio Revised Code.
- 8.6 In case a bidder, to whom a contract is awarded, fails to execute the contract within ten (10) days after notice of award is delivered in writing to the bidder, or in case a bidder fails to secure the contract with an acceptable performance bond and payments bond (each in the full amount of the contract) and execute the contract within ten (10) days after notice of the award is delivered in writing to the bidder, the bidder shall be considered as refusing the contract and shall forfeit their bid security in accordance with provisions of Section 153.54 of the Ohio Revised Code.
- 8.7 The bid security from each bidder may be held by the City for up to sixty (60) days. The bid security will be returned to the unsuccessful bidders after the contract has been signed and secured as provided herein above by the successful bidder.

9. **CONTRACT TIME**

- 9.1 The number of days within which, or the date by which, the work is to be substantially completed and also completed and ready for a pre-final payment, are set forth in the Invitation to Bidders and will be set forth in the Agreement Form.

10. **LIQUIDATED DAMAGES**

- 10.1 Provisions for liquidated damages, if any are set forth in the Agreement Form.

11. **SUBSTITUTE AND "OR-EQUAL" ITEMS**

- 11.1 The drawings or specifications may make a reference to a specific manufacturer's make or model identification for a material or item of equipment. The materials and equipment described in this way, by a manufacturer's brand name, establishes a standard of required type, function, quality, and expected life to be met by any proposed substitute or "or-equal" item. Such reference to a name shall be considered as requiring the contractor to furnish either that product or a substitute proposed by the contractor and approved by the Engineer as an approved equal.
- 11.2 An application for acceptance will not be considered by the Engineer until after the effective date of the Agreement.
- 11.3 Each submission by the contractor for review of a substitute shall include the name of the material or equipment for which it is to be substituted and a complete description of the

proposed item including drawings, cuts, performance and test data, and any other information necessary for an evaluation.

- 11.4 The Engineer's review of the substitution will consider the City's normal inventory of repair parts for the specified equipment and the possibility of increased down time for repairs to equipment of a type that repair parts are not in the City's inventory.

12. BID FORM

- 12.1 The Bid Form is included with the bidding documents. This form shall be used by the bidder to submit its bid.
- 12.2 All blanks on the Bid Form (except the signature line) must be completed by printing in ink or by typewriter.
- 12.3 Discrepancies between the sum of the labor bid price and the material bid price for an item will be resolved by using the total bid price stated by the bidder expressed in numbers. The Bid Price shall be the sum of the total for the extension of the unit prices times the estimated quantity. Discrepancies between the multiplication of the estimated quantity of an item on the proposal and the total unit price stated by the bidder will be resolved by using the total unit price stated by the bidder and the estimated quantity.
- 12.4 Bids by entities must be executed by an authorized officer, member, partner, or the equivalent and accompanied by evidence of authority to sign.
- 12.5 Bids by a partnership must be executed in the partnership name and signed by a partner, whose title must be shown below the signature.
- 12.6 The bid shall contain an acknowledgment of receipt of all addenda.
- 12.7 The address, telephone number and email address for communication regarding the bid must be shown.
- 12.8 An out-of-state entity must provide evidence of authority to conduct business in the State of Ohio.
- 12.9 The bid price stated in the bid form shall be the full price for completion of the work which price shall include all payments by the City to the contractor for all labor, material, equipment, supervision, and overhead required to complete the work.
- 12.10 The cost of completing all work specified in the drawings and in the specifications, in accordance with the contract documents, shall be included by the bidder in the pay items listed on the Bid Form.

13. SUBMISSION OF BIDS

- 13.1 Bids shall be submitted at the time and place indicated in the Invitation to Bidders and shall be bound with the other bidding documents, and enclosed in an opaque sealed envelope marked "**BID ENCLOSED**" for project (by name) plus the name and address of the bidder.

- 13.2 If the bid is sent through the mail or delivered by another delivery system, the sealed bid envelope shall be enclosed in a separate envelope with the notation "**BID ENCLOSED**" on the face of the delivery envelope. Bids received, if any, after the deadline for delivery of bids, will be returned unopened.

14. NO MODIFICATION OF BIDS

- 14.1 After submission of a bid to the City, no modification of the bid may be made by the bidder.

15. WITHDRAWAL OF BIDS

- 15.1 After submission of a bid to the City, and at any time before the deadline for bid submission, the bidder may withdraw its bid by giving a duly signed written notice requesting to withdraw the bid to the City. Thereafter, that bidder will be disqualified from further bidding on the work, including any re-bid held by the City.

16. OPENING OF BIDS

- 16.1 All bids received will be opened and (unless obviously non-responsive) read aloud publicly at the place where the bids are to be submitted. A summary of the prices bid will be mailed to all bidders after a tabulation of the bids is completed by the Engineer.

17. BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.1 All bids will remain subject to acceptance for sixty (60) days after the day of the bid opening, but the City may, in its sole discretion, release the bid and return the bid security prior to the end of the sixty (60) day period.

18. AWARD OF CONTRACT

- 18.1 The City reserves the right to reject any or all bids, including without limitation, the rights to reject any or all nonconforming, non-responsive, unbalanced or conditional bids, and to reject the bid of any bidder if the City believes that it would not be in the best interest of the City 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 fail to meet any other pertinent standard or criteria established by the City.
- 18.2 In evaluating the bids to determine the lowest and best bid, the City will consider the qualification of the bidders, whether or not the bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may have been submitted with the bid or as may be requested per the contract documents before the award is made by the City.
- 18.3 The City may consider the qualifications and experience of the subcontractors, suppliers, and other persons and organizations proposed for those portions of the work as to which the identity of subcontractors, suppliers, and other persons and organizations must be submitted as provided in the Supplementary Conditions. The City may consider also the operating cost, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the work when such data is required to be submitted

prior to the award of the work.

- 18.4 The City may conduct such investigations as the City deems necessary to assist in the evaluation of any bid and to establish the responsibility, qualifications and financial ability of the bidders, proposed subcontractors, suppliers, and other persons and organizations to perform and furnish the work in accordance with the contract documents to the City's satisfaction within the prescribed time.
- 18.5 If the contract is to be awarded, it will be awarded to the bidder whose evaluation by the City indicates to the City that the award will be in the best interest of the City.
- 18.6 If the contract is to be awarded, the City will give the successful bidder a Notice of Award within sixty (60) days after the day of the bid opening, unless the bidder grants a time extension to the City.

19. SIGNING OF AGREEMENT

- 19.1 When the City gives a written Notice of Award to the successful bidder, it will be accompanied by the required number of the unsigned counterparts of the Agreement. Within ten (10) days thereafter the contractor shall sign the Agreement and deliver all copies to the City Engineer. The City will then execute the Agreement, and the City Auditor's Certification of Funds, and will deliver one (1) fully executed Agreement to the contractor with the Notice to Commence Work. One copy of the Agreement and attached documents will be sent to the local agent of the contractor's surety.

20. CONTRACT SECURITY

- 20.1 When the successful bidder delivers the executed Agreement to the City, it must be accompanied by the required performance and payment bonds, unless the bond submitted with the bid was a **Bid/Contract Bond**, which will serve as the required contract security.

21. SALES TAXES

- 21.1 The City is exempt from Ohio State sales and use taxes on the materials and equipment to be incorporated into the work. Said taxes shall not be included in the bid price. The contractor shall contact the City Auditor's Office at 440-326-1530 for completion of the tax-exempt forms required for the project.

22. PROGRESS PAYMENTS AND RETAINER

- 22.1 Progress payments may be made to a Contractor before the work is completed. Progress payments so paid to a Contractor shall be based on actual measurements of labor and materials furnished, including materials delivered, under the contract to the date of estimate. The amount of a progress payment shall be determined by subtracting from the value of the portion of the work completed and materials furnished to the date of the estimate a retainer of ten percent (10%) and the sum of all previous progress payments.
- 22.2 Thirty (30) days after substantial completion of the work under the contract, and upon approval of the work by the Engineer, the ten percent (10%) retainage may be reduced to five

percent (5%).

- 22.3 After completion of all punch list items, the five percent (5%) retainage may be released. The Contractor shall be responsible for full guarantee of all work for one full year from the date of final completion of the contract. No retainer shall be subject to interest payments to the Contractor nor required to be deposited with an escrow agent who will pay interest to the Contractor.

23. EQUAL EMPLOYMENT OPPORTUNITY

- 23.1 In addition to the City of Elyria, Ohio, Codified Ordinance Chapter 167, the contractor shall, and all subcontractors working on the project shall, comply with the equal employment requirements for the utilization of minorities and females pursuant to Chapter 123 of the Ohio Administrative Code, the Governor's Executive Order of 1972, and the Governor's Executive Order 84-9.

24. CONTRACTOR LICENSES AND/OR PERMITS

- 24.1 The Contractor and all Subcontractors shall obtain, maintain and renew the necessary licenses and/or permits as required by the City of Elyria Building Department to complete the Work. The Contractor shall secure all credentials and pay for all necessary fees associated with obtaining these licenses and/or permits. Fees shall be included in the price of the contract and no additional payment will be made to the Contractor for reimbursement of fees. Licenses and/or permits shall be obtained prior to initiating any construction activity associated with that particular license.

25. WARRANTY OF WORKMANSHIP AND MATERIALS

- 25.1 The Successful Bidder shall warrant that all labor furnished under this project shall be competent to perform the tasks undertaken, that the product of such labor shall yield only first-class results, that all material and equipment provided shall be new and of high quality, that the completed work will be complete, of high quality, without defects, and that all work complies with the requirements of this project.
- 25.2 The duration of the Bidders warranty, including equipment and labor, shall be one (1) year from the date of Substantial Completion or upon written acceptance notice date by the City for individual pieces of equipment.

26. STORMWATER BEST MANAGEMENT PRACTICES

- 26.1 The Contractor and all Subcontractors shall consider and implement any and all storm water best management practices (BMPs) as per City of Elyria Codified Ordinance Chapter 960 "Storm Water Management" and as per the Ohio Department of Natural Resources in the most recent version of the Rainwater and Land Development manual for construction site runoff and post-construction site runoff as required to minimize, reduce and/or eliminate the discharge of contaminated or sediment-laden storm water from the construction site. All existing and proposed outlets and drainage courses shall be protected.

The Contractor shall develop and submit a plan for approval if the construction site is over

one acre. Weekly site inspections, including all inspections within 24 hours after a rain event, shall be the responsibility of the contractor. Completed and signed inspection forms shall be submitted to the Engineer within 48 working hours after the completion of the inspection. Maintenance of all BMPs shall be the responsibility of the contractor. The contractor and all of its subcontractors shall comply with all other storm water best requirements as specified in the specifications, documents, Storm Water Pollution Prevention Plans and/or drawings for this project. Cost for this work shall be included in 1) the individual unit price bid for Storm Water Pollution Prevention Plan (SWPPP), 2) the separate line items as applicable, or 3) the total lump sum base bid for the project, whichever is applicable and detailed in the bid form.

27. SUBCONTRACTOR QUALIFICATIONS

- 27.1 Within five (5) days after the bid opening and prior to Award of Contract, the Successful Bidder shall supply to the City a list of subcontractors that it intends to use for the project, if not included with the original bid submittal. The City, at its sole discretion, may request that a subcontractor be replaced or not used. If the Successful Bidder refuses to replace this subcontractor, the City reserves the right to award the contract to the next lowest and best bidder deemed most qualified to perform the Work. The City may request references for any subcontractor. If the Successful Bidder proposes to change a subcontractor at any time after submittal of the original list of subcontractors, including during construction, the new subcontractor shall be approved by the City prior to that subcontractor performing any work on the project.

AGREEMENT FORM

**AGREEMENT
BY AND BETWEEN
THE CITY OF ELYRIA
AND**

CONTRACT NO. ____-____

This Agreement is made and entered into, effective upon full execution by all parties, by and between the City of Elyria, Ohio, an Ohio municipal corporation with offices located at 131 Court St., Elyria, Ohio 44035 (the "City") and _____, an Ohio entity with offices located at _____, Ohio 44____ (the "Contractor"). The Contractor and the City shall be collectively referred to as the "Parties" and individually as the "Party."

WHEREAS, this Agreement was authorized by Ordinance No. _____, which was passed by the Elyria City Council on _____; and

WHEREAS, the City desires to enter into an agreement for _____ services (the "Agreement" or "Contract"); and

WHEREAS, the Contractor has submitted a bid in response to the City's request for bid proposals; and

WHEREAS, the City has determined that the Contractor has the experience and resources to complete the work as contemplated by this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants contained herein and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the City and the Contractor agree as follows:

ARTICLE 1 – WORK

The Contractor shall furnish all labor, equipment, supplies, and supervision of labors necessary to complete the work, which is the subject of this Agreement (the "Work"). The Contractor shall furnish all labor, equipment, supplies, and supervision of labors necessary to complete the work. The Contractor shall furnish all labor, equipment, supplies, and supervision of labors necessary to complete the work. This project includes the replacement of 853 linear foot of 8-inch sanitary sewer with 10-inch sanitary sewer from the forcemain discharge to the interceptor on Gulf road. Installation of a new lift station, including back-up power (lift station and back-up generator procured by the City). A new 270 linear foot 4-inch forcemain will be installed to convey flow to the new 10-inch gravity main. An existing 880 LF 4-inch forcemain will be upsized to 6-inch. The project is located in the city of Elyria, Ohio. Construction documents were prepared by AECOM Technical Services, Inc. and the Office of the Elyria City Engineer.

The City's request for bid proposals (attached as Exhibit "A") and Contractor's proposal (attached as Exhibit "B") are incorporated by reference as if fully rewritten herein. In the event that a discrepancy exists between the terms of Exhibits A and B, the terms of Exhibit A will be controlling and binding.

CITY OF ELYRIA OVERBROOK PUMP STATION II

In the event that a discrepancy exists between the terms of the Exhibits and this Agreement, the terms of this Agreement will be controlling and binding.

ARTICLE 2 - ENGINEER TO BE CITY'S REPRESENTATIVE

The services of the Contractor shall be carried out under the authority for contract administration of the Mayor and Safety-Service Director of the City, who is designating the City Engineer as the person who, as the City’s representative, will administer the contract, undertake and assume all duties and responsibilities, and will have the authority and rights assigned to the Engineer under the specifications for this work.

ARTICLE 3 - CONTRACT PERFORMANCE

COMPLETION TIME: Construction of this project shall begin at the discretion of the contractor, but all Consent Decree related work must be completed no later than December 31st, 2024. All remaining work must be completed by May 31st, 2025.

ARTICLE 4 - LIQUIDATED DAMAGES

The City and the Contractor recognize that time is of the essence in this agreement, and that the City will suffer financial loss (including but not limited to incidental and consequential damages) if the Work is not carried out within the time specified in Article 3 herein. Both the City and the Contractor recognize the impossibility of calculating the actual loss suffered by the City if the Work is not substantially completed within the specified time. Accordingly, instead of requiring any such proof, the City and the Contractor agree that as liquidated damages for delay (but not as a penalty) the Contractor shall pay the City the following sums for each calendar day that expires after the Completion Time for Consent Decree related work and all other work specified in Article 3 herein for completing the work assigned, unless the City grants a time extension for good reason not under the control of the Contractor.

<u>Amount Per Day</u>	<u>Calendar Day after Completion Time</u>
\$500	1 st through 30 th Day
\$750	31 st through 60 th Day
\$1,500	61 st Day and beyond

In addition to the foregoing, Contractor agrees to pay for the cost of any additional inspection services that the City requires as a result of delays.

ARTICLE 5 - CONTRACT AMOUNT

The City shall pay the Contractor for performance of the Work, in accordance with the contract documents, a total amount of, which shall not exceed, _____ Dollars and _____ Cents (\$_____).

The Contractor agrees that no extra work will require any extra or additional payments by the City, unless the extra work is authorized in writing by the City’s Mayor before the extra work is performed.

ARTICLE 6 - PAYMENT PROCEDURES

The Contractor agrees to promptly (by the 5th of each month), but not more frequently than once every thirty (30) days, submit an original invoice with one (1) copy and the required estimate computations with required certifications to the Engineer. The City will make progress payments on or about the 26th day of each month.

Prior to substantial completion, progress payments will be in an amount equal to ninety percent (90%) of the Work completed and ninety percent (90%) of the materials and equipment delivered to the project site, but not yet incorporated into the Work, less in each case, the aggregate of all payments previously made. No retainer shall be subject to interest payments to the Contractor nor required to be deposited with an escrow agent who will pay interest to the Contractor.

Acceptance of the Work, Pre-Final Payment and Final Payment: Upon final completion and acceptance of the work by the City in accordance with E.C.O. 143.06, the City shall pay the Contractor all funds due the Contractor, except for the five percent (5%) retainer per Section 22 of the Instructions to Bidders. The five percent (5%) retainer shall be paid by the City to the Contractor, after completion of all work and all punch list items. If defects in the Work are found during the one (1) year period after final completion, the defects are to be corrected by the Contractor. The corrected work shall be guaranteed for a period of one (1) year by the Contractor. After satisfactory completion of all work and all punch list items, the five percent (5%) retainer or any payment withheld for other purpose may be released.

ARTICLE 7 - CONTRACTOR'S REPRESENTATIONS

The Contractor acknowledges that it has taken the steps reasonably necessary to ascertain the nature and the location of the Work to be performed, and that it has investigated and satisfied itself as to the general and local conditions which can affect the Work, its cost, including but not limited to (1) the cost of purchasing, transportation, handling and storage of materials and supplies, (2) the availability of labor and cost, (3) the uncertainties of weather or similar physical conditions, including the time of year the project is to be constructed, (4) all other physical conditions which can impact the cost of doing Work, (5) the character of the equipment and facilities needed to prepare to do the work and to carry out the work to be performed, considering the limited work area, and the access to the site, (6) the cost of the Contractor's overhead, (7) the cost of providing worker supervision and management, (8) the cost of providing insurance, bonds, and related expenses.

The Contractor also acknowledges that it has had sufficient time during the bidding of the project to review all contract documents, and to make all investigations necessary to reasonably ascertain the cost of doing the Work. Further, the Contractor has correlated the results of observations, examination, investigations, and review of local labor conditions with the terms and conditions of all of the contract documents, including the addenda listed on the Contractor's Bid Form, in determining the price bid for the Work. The Contractor acknowledges that the City assumes no responsibility for any understanding reached or representations made concerning conditions which can affect the Work, by any of its officers, employees, or agents before execution of this Agreement, unless that understanding or representation is expressly stated in the contract documents which are a part of the Agreement.

ARTICLE 8 – INDEMNIFICATION

Contractor shall indemnify, defend and hold harmless the City, its elected officials, employees, representatives and agents (the “Indemnified Parties”) from and against any and all loss, cost, expense, damage, injury, liability, claim, demand, penalty or cause of action (including attorneys' fees) directly or indirectly arising out of, resulting from or related to (in whole or in part), (1) the Work performed hereunder, (2) the contract or (3) an act or omission of Contractor, a Subcontractor or any individual partnership or joint venture or corporation (a) directly or indirectly employed by Contractor or a Subcontractor or (b) for whose acts or omissions Contractor or a Subcontractor may be liable. Contractor shall promptly advise the City in writing of any action, administrative or legal proceeding or investigation as to which this indemnification may apply, and Contractor, at Contractor's expense shall assume on behalf of the City, and conduct with due diligence and in good faith, the defense with counsel satisfactory to the City, provided, that the City shall have the right to be represented therein by advisory counsel of its own selection and at its own expense; and provided further, that if the defendants in any such action include both Contractor and the City, and the City shall have reasonably concluded that there may be legal defenses available to the City which are different from or additional to, or inconsistent with those available to Contractor, the City shall have the right to select separate counsel to participate in a defense of such action on its own behalf at Contractor's expense. In the event of failure by Contractor to fully perform in accordance with this indemnification, the City, at its option, and without relieving Contractor of its obligations hereunder may so perform, but all costs and expenses so incurred by the City in that event shall be reimbursed by Contractor to the City, together with interest on the same from the day any such expense was paid by the City until reimbursed by Contractor at the rate of interest provided to be paid on judgments, by the law of the State of Ohio. The obligations of Contractor under this Section shall survive the expiration of the Contract.

In claims against any of the Indemnified Parties by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts or omissions they may be liable, the indemnification obligation under this Section shall not be limited by a limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or Subcontractor under workers' compensations acts, disability benefits acts, or other employee benefit acts.

The Contractor acknowledges that, as a political subdivision of the State of Ohio, the City does not indemnify any person or entity. The Contractor agrees that no provision of this Agreement or any other agreement between the Contractor and the City may be interpreted to obligate the City to indemnify or defend the Contractor or any other party.

ARTICLE 9 - CONTRACT DOCUMENTS

This Agreement and accompanying documents, including the Bid Form, Unit Price Schedule, Instructions to Bidders, Invitation to Bid, all Addenda listed on the Contractors Bid Form, the General Conditions, State Prevailing Wages and Technical Specifications as prepared by the City Engineer's Office, and all attachments submitted by the Contractor with its Bid Form, are made a part of the Agreement hereto as if the contents of those contract documents were fully rewritten herein. The City and the Contractor agree that there are no oral or written representations, understandings or agreements relating to this Agreement which are not fully expressed herein. No modification, change or amendment hereof shall be valid unless such is in writing and signed by the authorized representative of the party against which such modification, change or amendment is

sought to be enforced.

ARTICLE 10 - INSURANCE

10.1 Insurance Coverage Requirements. Contractor agrees to procure and maintain during the term of this Agreement insurance in the types and amounts shown below.

- a) Worker's Compensation in full compliance with the requirements of the State of Ohio.
- b) SEE REQUEST FOR BID PROPOSALS FOR SPECIFIC INSURANCE REQUIREMENTS.

All insurance shall be exclusive of defense costs whenever possible.

10.2 Insurance Coverage Terms and Conditions.

- a) The insurance policies of the Contractor, required for this Agreement, shall:
 - (i) Name the "City of Elyria, Ohio" as an Additional Insured. This does not apply to Worker's Compensation and Professional Liability.
 - (ii) Contain a waiver of subrogation provision wherein the insurer(s) waives all rights of recovery against the City; and
 - (iii) Be primary and not in excess or contingent on any other basis; and
- b) The insurance required for this Agreement shall be provided by insurance carrier(s) licensed to transact business and write insurance in the state(s) where operations are performed and shall carry a minimum A.M. Best's rating of A- VII or above.
- c) The terms of this Agreement shall be controlling and shall not be limited by any insurance policy provision.
- d) High-risk activities may require higher insurance limits.
- e) These insurance provisions shall not affect or limit the liability of the Contractor stated elsewhere in this Agreement or as provided by law.
- f) The Contractor shall require any and all of its subcontractors to procure, maintain, and pay premiums for the insurance coverages and limits of liability outlined above with respect to products, services, work and/or operations performed in connection with this Agreement.
- g) The City reserves the right to require insurance coverages in various amounts or to modify or waive insurance requirements on a case-by-case basis whenever it is determined to be in the best interest of the City.
- h) If the Bid/Proposal specifies the need for higher limits of liability for any applicable insurance provision, the Bid/Proposal specifications shall govern.
- i) Where coverages are made on a claims-made basis, the claims-made retroactive date on the policy shall be prior to the commencement of professional activity related to this Agreement.

j) The Contractor shall furnish a Worker's Compensation Certificate and Certificate of Insurance evidencing that the insurance coverages required herein are in full force and effect. Acceptance of a non-conforming certificate of insurance by the City shall not constitute a waiver of any rights of the parties under this Agreement.

k) The Certificate(s) of Insurance evidencing these coverages shall contain the following additional insured and waiver of subrogation language where applicable:

(i) "City of Elyria, Ohio is an additional insured for purposes of commercial general liability and automobile liability": and/or

(ii) "Waiver of subrogation in favor of the City of Elyria."

l) Any additional insured shall receive at least thirty (30) days' notice of any cancellation, change reducing the coverage, or refusal to renew, which is adverse to the interest of any additional insured to be affected. The City shall be provided with any notice of non-renewal, regardless of the cost. The same terms apply to any subcontractors to the extent practical.

10.3 Certificate of Insurance. This Agreement is contingent upon, and not valid or binding upon City, until such times as City receives said Certificate of Insurance.

ARTICLE 11 - TERMINATION

11.1 Termination for Default. Either party may terminate this Agreement, in whole or in part, whenever such party determines that the other has failed to satisfactorily fulfill its material obligations and responsibilities hereunder and is unable to cure such failure within a reasonable period of time, not to exceed thirty (30) calendar days. Such termination shall be referred to as "Termination for Default." If the defaulting party is unable to cure the failure within the specified time period, the party seeking to terminate may, by giving written notice thereof to the defaulting party, terminate this Agreement, in full or in part, as of the date specified in the notice of termination. The Contractor, however, shall be paid for all services and/or materials provided on or prior to the date of termination. Any fees paid in advance shall be returned to the City at a prorated amount.

11.2 Termination for Financial Instability. In the event that the Contractor becomes financially unstable to the point of (i) ceasing to conduct business in the normal course, (ii) making a general assignment for the benefit of creditors, or (iii) suffering or permitting the appointment of a receiver for its business or its assets, or there is a filing by or against the Contractor of a meritorious petition in bankruptcy under any bankruptcy or debtor's law, the City may, at its option, terminate this Agreement under Section 11.1, the "Termination for Default" clause, by giving written notice thereof.

ARTICLE 12 – ASSIGNMENT

No assignment by a party hereto of any rights under or interests in the Agreement 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.

ARTICLE 13 – SAFETY

The Contractor agrees to comply with Chapter 4121:1-3 of the Ohio Administrative Code entitled “Specific Safety Requirements of the Industrial Commission of Ohio relating to Construction,” effective November 1, 1979 and with the “Federal Occupational Safety and Health Act of 1970 and Code of Federal Regulation, Title 29, Chapter XVII, Part 1926,” and to also comply with all other requirements of law.

ARTICLE 14 – WARRANTY

THE CONTRACTOR HEREBY WARRANTS THAT THE SERVICES WILL NOT INFRINGE, MISAPPROPRIATE OR VIOLATE ANY INTELLECTUAL PROPERTY OR ANY OTHER RIGHT OF ANY PERSON OR ENTITY. THE SERVICES WILL BE PERFORMED IN A PROFESSIONAL AND WORKMANLIKE MANNER, CONSISTENT WITH INDUSTRY STANDARDS. THE SERVICES WILL BE PERFORMED IN STRICT ACCORDANCE WITH THE HIGHEST STANDARDS OF CARE, SKILL, DILIGENCE AND PROFESSIONAL COMPETENCE APPLICABLE TO SUPPLIERS/CONTRACTORS ENGAGED IN PROVIDING SIMILAR SERVICES IN THE LORAIN COUNTY AREA. THE CONTRACTOR HAS THE REQUISITE SKILL AND STAFF TO PERFORM THE SERVICES REQUIRED HEREUNDER FULLY, IN A TIMELY AND EFFICIENT MANNER. THE CONTRACTOR WILL PERFORM THE SERVICES IN ACCORDANCE WITH ALL APPLICABLE LAWS.

ARTICLE 15 - PREVAILING WAGE RATES

The Contractor agrees to pay wages equal to or exceeding the minimum wage rates as determined by the Ohio Department of Commerce (“ODOC”). The Contractor agrees to require all subcontractors, if any, to pay wages equal to or exceeding the minimum wage rates as determined by the ODOC.

ARTICLE 16 – SUCCESSORS

The City and the Contractor each bind themselves, their partners, successors, assigns and legal representatives in respect to all conveniences, agreements and obligations contained in the contract documents.

ARTICLE 17 - OTHER PROVISIONS

The Contractor agrees to comply with the requirements of Chapter 167 of the Elyria Codified Ordinances as amended, regarding Affirmative Action and Equal Employment Opportunity. All sections of Chapter 167 as amended on the first date of advertising this project, which are to be a part of any construction or service agreement executed by the City, are included in this Agreement by reference, as if repeated in full herein.

ARTICLE 18 – REVIEW BY COUNSEL

Each party and its counsel have reviewed and approved this Agreement and any ambiguities will not be resolved against the drafting party.

ARTICLE 19 – ENTIRE AGREEMENT

This Agreement sets forth the entire agreement between the parties and supersedes any prior agreements, negotiations or understandings of the parties.

ARTICLE 20 – GOVERNING LAW

This Agreement shall be governed by, and shall be construed and enforced in accordance with, the laws of the State of Ohio. The parties agree that any actions regarding this Agreement or the Work performed hereunder shall be brought in the Court of Common Pleas of Lorain County, Ohio. Each party consents to the exclusive jurisdiction of the Court of Common Pleas of Lorain County, Ohio, and hereby agrees not to challenge this Governing Law and Jurisdiction provision, and further agrees not to attempt to remove any legal action outside of Lorain County for any reason.

ARTICLE 21 – SEVERABILITY

If any term or provision of this Agreement is deemed by a court of law to be invalid or unenforceable, the remainder of this Agreement shall not be affected thereby, and each remaining term or provision of this Agreement shall be valid and enforceable to the fullest extent permitted by law.

ARTICLE 22 – SURVIVAL OF TERMS

Termination or expiration of this Contract for any reason shall not release either party from any liabilities or obligations set forth in this Contract which (i) the parties have expressly agreed shall survive any such termination or expiration, or (ii) remain to be performed or by their nature would be intended to be applicable following any such termination or expiration.

ARTICLE 23 – WAIVER

No delay or omission by either party in the exercise of any right or power shall impair any such right or power or be construed to be a waiver thereof. A waiver by either of the parties of any of the covenants, conditions or agreements to be performed by the other or any breach thereof shall not be construed to be a waiver of any succeeding breach thereof or of any other covenant, condition or agreement herein contained. No change, waiver or discharge hereof shall be valid unless in writing and signed by an authorized representative of the party against which such change, waiver, or discharge is sought to be enforced.

ARTICLE 24 – FORCE MAJEURE

Neither Party shall be in default if its failure to perform any obligation hereunder is caused solely by supervening conditions beyond that Party's reasonable control, including, without limitation, acts of God, civil commotion, strikes, labor disputes, or governmental demands or requirements.

ARTICLE 25 – INDEPENDENT CONTRACTOR

It is fully understood and agreed that the Contractor is an independent contractor and is not an agent, servant, or employee of the City. The Contractor declares that it is engaged as an independent business and has complied with all applicable federal, state, and local laws regarding business

permits and licenses of any kind, including but not limited to any insurance coverage, workers' compensation, or unemployment compensation that is required in the normal course of business and will assume all responsibility for any federal, state, municipal or other tax liabilities.

ARTICLE 26 - ANTI-DISCRIMINATION

Contractor agrees that in its employment of labor, skilled or unskilled, there shall be no discrimination exercised against any person because of race, color, religion, national origin, sex, gender, ancestry, age, disability, sexual orientation, sexual identity, genetic information, military status, or veteran status, and a violation of this term shall be deemed a material breach of this Contract.

ARTICLE 27 – HEADINGS

The section headings appearing in this Contract are inserted only as a matter of convenience and in no way define, limit, or describe the scope or extent of such section.

ARTICLE 28 - COUNTERPARTS

This Contract may be executed in separate original or facsimile counterparts, each of which shall be deemed an original, and all of which shall be deemed one and the same instrument.

ARTICLE 29 – OHIO REVISED CODE

Contractor shall comply with all applicable provisions of Sections 2909.21 to 2909.34 Ohio Revised Code (Ohio Patriot Act) and Sections 3517.13 Ohio Revised Code.

(THE REMAINDER OF THIS PAGE INTENTIONALLY LEFT BLANK)

(SIGNATURE PAGE TO FOLLOW)

CITY OF ELYRIA OVERBROOK PUMP STATION II

IN WITNESS WHEREOF, this Agreement has been executed in duplicate by the City and the Contractor on the dates below.

CONTRACTOR NAME

THE CITY OF ELYRIA, OHIO

Signature

Kevin Brubaker – Mayor Date

Print Name

APPROVED AS TO FORM:

Date

Amanda R. Deery, Law Director

Date

**NOTICE TO COMMENCE WORK
and
NOTICE TO COMMENCEMENT OF A PUBLIC IMPROVEMENT
PURSUANT TO REVISED CODE SECTION 1311.252**

State of Ohio

County of Lorain

I, Kevin Brubaker, being first duly sworn, say that:

- 1) Affiant is the Mayor of the City of Elyria, Ohio.
- 2) The City of Elyria, Ohio gives this Notice to Commence Work to the Contractor, for the public improvement identified as **OVERBROOK PUMP STATION II**
- 3) The following is the name, address and trade of the principal contractor working on this public improvement:

NAME:
 ADDRESS:
 TRADE:
 DATE OF FIRST EXECUTED CONTRACT:

- 4) The following is the name and address of the surety for the principal contractor:

NAME OF SURETY:
 ADDRESS OF SURETY:

- 5) For the purpose of serving an affidavit pursuant to Revised Code Section 1311.26, service may be made upon the following representative of the Public Authority:

Mayor Kevin Brubaker
 CITY OF ELYRIA, OHIO
 131 Court Street
 Elyria, Ohio 44035

FURTHER AFFIANT SAYETH NAUGHT.

Signature: _____

SWORN TO BEFORE ME and subscribed in my presence this _____ day of _____, 2024.

(SEAL)

Notary Public: _____

FINANCE DIRECTOR'S CERTIFICATION OF FUNDS

I hereby certify that there is in the Treasury of the City of Elyria, State of Ohio, to the credit of the _____ Fund, not appropriated for any other purpose and/or in the process of collection, as required by law, the sum of _____ dollars and no cents (\$_____) to pay the cost of the attached contract for the **OVERBROOK PUMP STATION II** in Elyria, Ohio.

Executed this _____ day of _____ in the year of 2024.

Finance Director

Ordinance No.: 2024-80

Passed On: May 6, 2024

Account No.:

RESOLUTION OF DIRECTORS

Date _____

The Board of Directors of: _____ (Firm Name)

met on the ____ day of _____ of _____.

A motion was made, seconded and passed authorizing _____ (Name),

_____ (Title) to sign and submit a bid to the City of Elyria, Ohio, for

the: **OVERBROOK PUMP STATION II**

and authorizing the same person to enter into a contract with the City of Elyria, Ohio, if the City awards the work to the firm.

By: _____ Title: _____
(Signature)

ATTEST:

By: _____ Title: _____
(Signature)

(CORPORATION SEAL)

NOTE: A similar form with an original signature and a current date (within 12 months) may be used in place of this form. If the form submitted with the bid has photocopy signatures, the form must be replaced with one having original signatures, before the contract is signed.

**BID FORM
UNIT PRICE CONTRACT**

PROJECT: OVERBROOK PUMP STATION II PROJECT

THIS BID IS SUBMITTED TO: Mayor Kevin Brubaker
Office of the Safety-Service Director
City of Elyria, Ohio
131 Court Street
Elyria, Ohio 44035

1. The undersigned **Bidder** proposes and agrees, if this **Bid** is accepted, to enter into an **Agreement** with the **City** in the form included in the **Contract Documents** to complete all **Work** as specified or indicated in the **Contract Documents** for the **Contract Price** and within the **Contract Time** indicated in this bid, and all in accordance with the **Contract Documents**.
2. **Bidder** accepts all of the terms and conditions of the **Instructions to Bidders**, including without limitation those dealing with the disposal of the **Bid Security**. This **Bid** will remain open for **sixty (60)** days after the day of **Bid Opening**. **Bidder** will sign the **Agreement** and submit the documents required by the **Contract Documents** within ten (10) days after the date of the **City’s Notice of Award**.
3. In submitting this **Bid**, the **Bidder** represents, as more fully set forth in the **Agreement**, that:
 - (a) The **Bidder** has examined copies of the **Invitation to Bid**, the **Instructions to Bidders**, the **Specifications**, the **Supplementary Conditions** and all other **Contract Documents**, and also the following addenda:

Date	Number	Topics

the receipt of all of which is hereby acknowledged.

- (b) **Bidder** has examined the site and locality where the work is to be performed, the legal requirements (**Federal, State, and Local**, laws, ordinances, rules and regulations) and, conditions affecting cost, progress or performance of the **WORK**, and has made such independent investigations as **Bidder** deems necessary.
 - (c) 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 himself any advantage over any other bidder or over the **City**.
4. **Bidder** agrees that the **Work** on the project will be completed within 210 days from the date of the Notice to Commence Work.
5. **Bidder** will complete the **Work** in accordance with the Contract Documents for the following unit prices:

CITY OF ELYRIA OVERBROOK PUMP STATION II

BID FORM

OVERBROOK PUMP STATION II PROJECT

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	LABOR PRICE	MATERIAL PRICE	TOTAL UNIT PRICE	TOTAL COST
1	MOBILIZATION / DEMOBILIZATION (5.0% MAX)	1	LS	\$	\$	\$	\$
2	STORMWATER POLLUTION PREVENTION	1	LS	\$	\$	\$	\$
3	REPLACE 8-INCH SAN WITH 10-INCH PVC SAN.	853	LF	\$	\$	\$	\$
4	NEW 8-INCH SAN AT PUMP STATION	48	LF	\$	\$	\$	\$
5	NEW MANHOLES	3	EA	\$	\$	\$	\$
6	NEW 4-INCH PVC FORCEMAIN	270	LF	\$	\$	\$	\$
7	LIFT STATION INSTALLATION	1	LS	\$	\$	\$	\$

CITY OF ELYRIA OVERBROOK PUMP STATION II

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	LABOR PRICE	MATERIAL PRICE	TOTAL UNIT PRICE	TOTAL COST
8	REPLACE EXISTING 4" FM WITH 6"FM	880	LF	\$	\$	\$	\$
9	BY-PASS PUMPING	1	LS	\$	\$	\$	\$
10	ELECTRICAL CONNECTION TO PUMP STATION AND B/U GENERATOR	1	LS	\$	\$	\$	\$
11	FULL DEPTH PAVEMENT REMOVAL AND REPLACEMENT	600	SY	\$	\$	\$	\$
12	ASPHALT REPAIR	1000	SY	\$	\$	\$	\$
13	CONCRETE REPAIR	60	SY	\$	\$	\$	\$
14	SITE WORK	1	LS	\$	\$	\$	\$
	TOTAL BASE BID					\$	_____

UNOFFICIAL TOTALS

BASE BID ITEMS (1) THROUGH (14) \$ _____

The following documents are attached to and made a condition of this bid:

- (a) BID SECURITY, in the form of _____.
- (b) City EEO Form, and City Affirmative Action Form
- (c) Bidder’s Insurance Agent’s Affidavit, signed by the agent (facsimile or electronic copy is acceptable at time of bidding, provided that the original is received by the City within five (5) days of bid submission.
- (d) Tax Affidavit
- (e) Bidder’s Affidavit

The bidder is _____ (Insert Individual, Partnership, Corporation, Limited Liability Company, Limited Partnership, Limited Liability Partnership, or Joint Venture.)

This **Proposal** is signed on this _____ day of _____, in the year of 2024.

BIDDER: _____ (SEAL)
(Firm Name)

BY: _____ Title: _____
(Printed Name)

BY: _____ Attest: _____
(Authorized Signature)

BUSINESS ADDRESS: (Address to which all official notices are to be sent.)

Telephone Number: (_____) _____ - _____ FAX Number: (_____) _____ - _____

Email Address: _____

(NOTE: If **Bid** is by a partnership, a partner must sign; if the **Bid** is by a corporation, limited liability company an authorized officer must sign,; and if **Bid** is by a joint venture, an authorized officer or individual of all members of the joint venture must sign).

CITY OF ELYRIA OVERBROOK PUMP STATION II

BID GUARANTY AND CONTRACT BOND

(OHIO REVISED CODE SECTION 153.571)

Bond Number _____

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____

(Bidder's Name and Address)

as principal and _____ (Name of Sureties) as sureties, are hereby held and firmly bound unto the City of Elyria, Ohio, as obligee in the penal sum of the dollar amount of the bid submitted by the principal to the obligee on _____ (Date) to undertake the project known as _____

The penal sum referred to herein shall be the dollar amount of the principal's bid to the obligee, incorporating any additive or deductive alternate proposals made by the principal on the date referred to above to the obligee, which are accepted by the obligee. In no case shall the penal sum exceed the amount of \$ _____ (Dollars in Figures) _____

_____ (Dollars in Words). (If the amount in figures and the amount in words are different, the amount in words shall be used as the amount intended.) (If the foregoing blank is not filled in, the penal sum will be the full amount of the principal's bid, including alternates. Alternatively, if the blank is filled in, the amount stated must not be less than the full amount of the bid including alternates, in dollars and cents. A percentage is not acceptable.) For the payment of the penal sum well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

THE CONDITION OF THE ABOVE OBLIGATION IS SUCH that whereas the above named principal has submitted a bid for: OVERBROOK PUMP STATION II.

Now, therefore, if the obligee accepts the bid of the principal and the principal fails to enter into a proper contract in accordance with the bid, plans, details, specifications, and bills of material; and in the event the principal pays to the obligee the difference not to exceed ten percent (10%) of the penalty hereof between the amount specified in the bid and such larger amount for which the obligee may in good faith contract with the next lowest bidder to perform the work covered by the bid; or in the event the obligee does not award the contract to the next lowest bidder and resubmits the project for bidding, the principal pays to the obligee the difference not to exceed ten percent (10%) of the penalty hereof between the amount specified in the bid, or the costs, in connection, and printing and mailing notices to prospective bidders, whichever is less, then this obligation shall be null and void, otherwise to remain in full force and effect; if the obligee accepts the bid of the principal and the principal within ten (10) days after the awarding of the contract enters into a proper contract in accordance with the bid, plans, details, specifications, and bill of materials, which said contract is made a part of this bond the same as though set forth herein;

Now also, if the said principal shall well and faithfully do and perform the things agreed by obligee to be done and performed according to the terms of said contract; and shall pay all lawful claims of subcontractors, materialmen, and laborers, for labor performed and materials furnished in the carrying forward, performing, or completing of said contract; we agreeing and assenting that this undertaking shall be for the benefit of any materialman or laborer having a just claim, as well as for the obligee herein; then this obligation shall be void; otherwise the same shall remain in full force and effect; it being expressly understood and agreed that the liability of the surety for any and all claims hereunder shall in no event exceed the penal amount of this obligation as herein stated.

The said surety hereby stipulates and agrees that no modifications, omissions, or additions, in or to the terms of the said contract or in or to the plans or specifications therefor shall in any wise affect the obligations of said surety on this bond.

Name of Bidder: _____ (SEAL)

By: _____ Title: _____
(Printed Name)

By: _____ Attest: _____
(Signature) (Signature)

Name of Surety: _____ (SEAL)

Surety Mailing Address: _____

By: _____ Title: _____
(Printed Name)

By: _____ (Attorney-in-Fact)
(Signature)

Surety Agent Mailing Address: _____

CONSENT OF SURETY

KNOW ALL MEN BY THESE PRESENTS, that we _____

(Name of Bidder) as principal and _____ (Name of Surety Company)

a corporation created and existing under the laws of the State of _____ and having its

principal office at _____
(Complete mailing address of Surety Company) are held firmly bound unto the **City of Elyria, Ohio**, hereby jointly and severally and binding our heirs, successors, administrators, executors, legal representatives and assigns by these presents.

THE CONDITION OF THIS OBLIGATION are such that whereas, the above named principal submits the herewith proposal for the **OVERBROOK PUMP STATION II** in the City of Elyria, Ohio, in conformance with the Invitation to Bid, and with the Instructions to Bidders. We, the above named surety, will meet all stipulations and will execute the Surety Bonds as hereinafter, to the above named principal in event he should be awarded a contract and in an amount of _____ (Amount in Words) which is an amount equaling or exceeding the amount of said principal's bid plus all additive alternates, and guaranteeing its performance in conformity with the plans and specifications, and a payment bond in the amount of _____ (Amount in Words) amount equaling or exceeding the amount of said principal's bid plus all additive alternates, as guaranteeing the payment of all laborers and suppliers of materials for the project, to the City of Elyria, Ohio.

WITNESS OUR SIGNATURES this _____ day of _____, 2024.

Name of Bidder: _____ (SEAL)

By: _____ Title: _____
(Printed Name)

By: _____ Attest: _____
(Signature) (Signature)

Name of Surety: _____ (SEAL)

By: _____ Title: _____
(Printed Name)

By: _____ Attest: _____
(Signature) (Signature)

Surety Agent Mailing Address: _____

BIDDER'S INSURANCE AGENT'S AFFIDAVIT

Project: **OVERBROOK PUMP STATION II**

I, _____, _____, first being duly sworn do state the following:
(Name) (Title)

- (a) that I am an Insurance Agent.
- (b) that I have reviewed the insurance requirements in the General Conditions, and have noted therein the requirements on insurance including the cancellation, and non-renewal provisions.
- (c) that I am familiar with the insurance that _____
(Bidder's Name)
has in force, and that its insurance meets the City requirements, or that it can be amended to meet the City requirements.
- (d) that if an award of contract is made by the City to the Bidder an insurance certificate will be issued within ten (10) days, which will include the **City of Elyria, Ohio, as Additional Insured.**

Further, Affiant sayeth naught.

(Agents Signature)

Sworn to and subscribed in my presence this _____ day of _____, 2024.

(Notary Public)

(SEAL)

(Attach Bidders Insurance Certificate to this page)

(The insurance certificate may be submitted after the bid opening date.)

TAX AFFIDAVIT

State of _____
County of _____ SS

I _____ (Name), _____ (Title), of the
_____ (Company Name), first being duly
sworn do depose and state that it has submitted a competitive bid for a contract, to be administered
and awarded by the City of Elyria, Ohio.

Further, Affiant says that it was not charged with any delinquent personal property taxes, penalties or
interest due or owing to the County of Lorain, State of Ohio, except as hereinafter stated:

(If none, state "NONE". If due, state "AMOUNT DUE", together with assessed interest and penalty.)

Further, Affiant says that a copy of this statement, affirmed under oath shall be made a part of its bid
and the contract to be awarded.

Further, Affiant sayeth naught.

Business Name: _____

By: _____ Title: _____

Sworn to and subscribed in my presence this _____ day of _____, 2024.

(SEAL)

(NOTARY PUBLIC)
My Commission Expires _____

BIDDER'S AFFIDAVIT

This affidavit is to be filled out and executed by the BIDDER; if the bid is made by a corporation, then by it's properly authorized agent.

STATE OF _____

SS

COUNTY OF _____

I, _____ being first duly sworn, deposes and says that he/she is _____ (sole owner, a partner, officer of, etc.) of the _____ (Name of Business) the party making the enclosed

bid; and says further that:

(Give the names of all persons, firms or corporations interested in the enclosed bid)

_____ and, that those listed are the only party or parties interested with the profits of any contract which may result from the herein contained bid; that the said proposal is made without any connection or interest in the profits thereof with any other person making any other bid or proposal for said work; that no member of the City Council, the head of any department , division, or bureau or employee therein or any officer of the City of Elyria, Ohio is directly or indirectly interested therein; that said bid is genuine and not collusion, or communication or conference, with any person, to fix the bid price of Affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price, or that of any other bidder, or to secure any advantage against the City of Elyria, Ohio, or any person interested in the proposed contract; and that all statements contained in said proposal or bid are true; that such bidder has not, directly or indirectly submitted this bid, or contents thereof, or divulged information or data relative thereto to any association, or to any member or agent thereof; and further says that all the statements made by him in said proposal or bid are true.

AFFIANT

Sworn to and subscribed before me this _____ day of _____, 2024.

Notary Public in and for,
_____ County, Ohio
My Commission Expires: _____

PENALTY FOR FALSE CERTIFICATION

Section 35 of the Criminal Code, as amended, provides a penalty of not more than \$10,000.00 or imprisonment of not more than ten years, or both, for knowingly and willfully making or causing to be made, "any false or fraudulent statements --- or use or cause to be made or used and false ---account, claim, certification, affidavit, or deposition, knowing the same to contain any fraudulent or fictitious statement--"relating to any matter within the jurisdiction of any Governmental Department or Agency.

EQUAL EMPLOYMENT OPPORTUNITY CLAUSE

During the performance of this contract, the contractor agrees as follows:

1. The contractor shall not discriminate against any employee or applicant for employment because of race, religion, age, color, sex, national origin or handicap. The contractor shall take affirmative action to insure that applicants are employed and that employees are treated without regard to race, religion, color, sex, national origin or handicap during employment.

As used herein, the work "treated" shall mean and include without limitation, the following:

recruited: whether in the form of rates of pay or other forms of compensation

selected for training: including apprenticeship, promoted, upgraded, transferred, laid off and terminated

The contractor agrees to and shall post in conspicuous places available to employees and applicants for employment, notices to be provided by the contracting officers setting forth the provisions of the non-discrimination clause.

2. The contractor shall, in all solicitations or advertisement for employees placed by or on the behalf of the contractor; state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, national origin or handicap.
3. The contractor shall submit to the City, in writing, an affirmative action plan and shall furnish all information and reports required by the City or its representatives pursuant to this chapter and permit access to the contractor's books, records, and accounts by the contracting agency and affirmative action officials for purposes of investigation to ascertain compliance with the Affirmative Action Program. The contractor may comply with the provisions of this section by doing one of the following:
 - (a) The contractor may submit its Affirmative Action Program in writing at the time of its submission of bid; or
 - (b) The contractor may submit its Affirmative Action Program in writing prior to its submission of bid for pre-certification.

The contractor's Affirmative Action Program may be pre-certified upon the filing and approval of its Affirmative Action Program with the City's OEO office not more than six months prior to its bid submission. Upon pre-certification, the contractor will be issued a pre-certification compliance number for its Affirmative Action Program, which may be used and referred to in any bid submission in the place of any other written requirement for Affirmative Action Program submission. It shall be the sole responsibility of the contractor to be re-certified upon the expiration of its pre-certification. Approved programs may be reviewed before any pre-certification expiration date.

4. The contractor shall send to each labor union or representatives of workers with which he/she has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representative of the contractor's commitments under the Equal Employment Opportunity Clause of the City of Elyria and shall post copies of the notice in conspicuous places

CITY OF ELYRIA OVERBROOK PUMP STATION II

available to employees and applicants for employment.

5. The contractor shall take such action with respect to any subcontractor as the City of Elyria may direct as a means of enforcing the provisions of the EEO Clause including penalties and sanctions for noncompliance. Provided, however; that in the event the contractor becomes involved in or is threatened with litigation as a result of such direction by the City, the City will enter into such litigation as is necessary to protect the interests of the City and to effectuate the City's Equal Opportunity Program and in the case of contracts receiving federal assistance, the contractor or the City may request the United States to enter into such litigation to protect the interests of the United States.
6. The contractor shall file and shall cause his/her subcontractors, if any, to file compliance reports with the City in the form and to the extent prescribed by the City or its representative. Compliance reports shall contain information as to the employment practices, policies, programs and statistics of the contract and subcontractor(s).
7. The contractor shall include the provisions of the Equal Employment Opportunity Clause in every subcontract or purchase order so that such provisions will be binding upon each subcontractor and/or vendor.
8. Refusal by the contractor or subcontractor to comply with any provision of this program as herein stated and described will subject the offending party to any or all of the following penalties:
 - (a) Withholding of all future payments under the involved public contracts to the contractor in violation until it is determined that the contractor or subcontractor is in compliance with the provision of this contract.
 - (b) Refusal of all future bids for any public contract with the City or any of its departments or divisions until such time as the contractor or subcontractor demonstrates that he/she has established and shall carry out the policies of the programs as herein outlined.
 - (c) Cancellation of the public contract and declaration of forfeiture of the performance bond.
 - (d) In cases in which there is substantial or material violation or the threat of substantial or material violation of the compliance procedure or as may be provided by contract, appropriate proceedings may be brought to enforce these provisions, including the enjoining within applicable laws of contractors, subcontractors or other organizations, individuals, or groups who prevent directly or indirectly or seek to prevent directly or indirectly compliance with the policy as herein outlined.

Name of Company Official

Title

Name of Company

Area Code/Telephone Number

Signature of Company Official

Date Signed

CONTRACTOR'S/VENDOR'S AFFIRMATIVE ACTION INFORMATION SHEET

This Affirmative Action Information Sheet is to be completed and returned with the Bid.

Bidder's EEO Officer's Name: _____

Bidder's EEO Officer's Title: _____

Bidder's Firm Name: _____

Address: _____

City/State/Zip Code _____

Telephone Number: (_____) _____ - _____ Fax Number: (_____) _____ - _____

Note: The bidder must comply with either #1 or #2 below. (Place a check mark in the correct item.)

#1 _____ Our firm has been pre-certified, by Elyria's EEO Officer.

Our pre-certification number is: _____

Our pre-certification expires on: _____

_____ A copy of our pre-certification letter from Elyria is attached.

#2 _____ We are enclosing our own Affirmative Action Plan (number of page(s) ___) with this bid.

(For City Office Use Only)

CITY OF ELYRIA SIGN-OFF:

Affirmative Action/Equal Opportunity Officer: _____

Comments:

CITY OF ELYRIA OVERBROOK PUMP STATION II

CONTRACTOR/SUPPLIER AFFIRMATIVE ACTION PROGRAM
TOTAL PRESENT WORKFORCE BREAKDOWN

TABLE 1

JOB CATEGORY	TOTAL MALES	MALE EMPLOYEES MINORITY GROUPS				TOTAL FEMALES	FEMALE EMPLOYEES MINORITY GROUPS				TOTAL ALL EMPLOYEES
		WHITE	BLACK	SPANISH	OTHER MINORITY		WHITE	BLACK	SPANISH	OTHER MINORITY	
OFFICIALS/ ADMINISTRATORS											
PROFESSIONALS											
TECHNICIANS											
PROTECTIVE SERVICE											
SALES											
PARAPROFESSIONALS											
OFFICE-CLERICAL											
SKILLED CRAFT SPECIFY											
JOURNEYMEN											
HELPERS											
APPRENTICES											
TRAINEES											
LABORERS											
SERVICE/CUSTODIAL											
OTHERS (SPECIFY)											
TOTALS											

SUPPLEMENTARY CONDITIONS

I. INSURANCE LIMITS:

LIABILITY, PROPERTY DAMAGE, VEHICLE AND BUILDER'S RISK INSURANCE: Contractor shall purchase and maintain such comprehensive general liability and other types of insurance as will provide protection from claims as set forth herein which may arise out of or result from Contractor's performance of the work and Contractor's other obligations under all contract documents, whether such performance is by Contractor, by any lower subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable.

The claims types for which insurance shall be provided shall include:

- a) Claims under workers compensation, disability benefits and others similar employee benefit acts;
- b) Claims for damage because of bodily injury, occupational sickness, sickness, disease, or death of any person;
- c) Claims for damages sustained by any person as a result of an employment practices offense directly or indirectly related to the employment of such person by the contractor or a subcontractor or by any other person for any other reason;
- d) Claims for damages, other than to the work itself, because of injury to or destruction of tangible property, including loss of the use resulting therefrom;
- e) Claims for damages because of bodily injury or death of any person or for property damage arising out of the ownership, leasing, renting, hires, loaned, or otherwise using, and the maintenance of any item of construction or equipment of any power tools by Contractor or a subcontractor;
- f) Claims for damages because of bodily injury or death of any person or for property damage arising out of the ownership, leasing, renting or using maintenance of any motor vehicle, by Contractor or a subcontractor;
- g) Claims for damages to the work itself, and/or all existing City property located in the proximate area of the work, because of injury or destruction of the tangible property, including the loss of use resulting therefrom; and
- h) Claims for damages because of bodily injury or death of any person or property damage arising out of the use, transportation or storage of any type of explosives, explosive devices or dangerous ordnance use in doing work included in the Contract.

The insurance limits required by this section shall include the specific coverage as are applicable to the work, and shall be written for the specified limits stated herein, or for the specific limits as provided in any applicable supplementary specification, or as may be required by law, wherever is greater.

The Contractor shall have and maintain the type of insurance that provides the limits of coverage for each occurrence. If the Contractor's policy is not of the form providing coverage limits for each occurrence, then he shall obtain a rider providing coverage by occurrence for the work under this specification.

The insurance shall be written by a solvent and otherwise acceptable company(s) authorized to do business in the State of Ohio,

Evidence of insurance shall be provided by the Contractor to the City for review and acceptance by the City, before the issuance of the Notice to Commence.

Such evidence shall consist of the Contractors insurance agents "insurance affidavit" (when requested, on a form that is on file at the City Engineer's office) the Certificate of Insurance plus the Certificate of Compliance provided by the Ohio Department of Insurance for the Company(s) in question.

Failure to provide evidence of the maintenance of all of the required insurance shall suspend the City's obligation to pay for any and all work performed after the cessation of the required coverage for which evidence has previously been provided, and can be the basis of a non-compensable order to suspend work or for the termination of the contract for cause.

CITY OF ELYRIA OVERBROOK PUMP STATION II

The Contractor's policy shall provide and the Certificate of Insurance shall reflect the fact that the City is an additional insured and all (if any) other additional insured shall receive at least thirty (30) days notice of any cancellation, change reducing the coverage, or refusal to renew, which is adverse to the interests of the City and/or other additional insured to be effected. The City and other additional insured shall be provided with any notice on non-renewal, regardless of the cause.

The liability limits for the required coverage notes above shall be at least:

	EACH OCCURRENCE	AGGREGATE
Bodily Injury & Property Damage Combined	\$ 2,000,000.00	\$ 2,000,000.00
Vehicle Liability	\$ 1,000,000.00	\$ 1,000,000.00
Builders Risk/Installation Floater (if applicable, In the sole discretion of the City Engineer)	(The amount of the contract)	

ANY AND ALL LIABILITY LIMITS SHALL BE EXCLUSIVE OF DEFENSE COSTS.

II. CONTROLLING LAW AND JURISDICTION:

This Agreement shall in all respects be interpreted and construed in accordance with and governed by the laws of the State of Ohio. This Agreement shall be subject to the jurisdiction of the Court of Common Pleas Lorain County, Ohio.

III. ENGINEER:

Unless otherwise provided, the **Engineer** shall be the City of Elyria Engineer.

IV. CONTINGENCY, IF ANY:

Any Extra Work performed or Extra Materials utilized as part of the Contingency line item, if included in the project, shall be approved in writing by the Engineer, and only the Engineer, prior to commencement of that activity and prior to payment for that activity. Final costs for the Extra Work incurred shall be approved by the Engineer. Approval of this activity shall be directly related to and necessary for the completion of the Scope of Work described in the bid documents, specifications or detailed plans with the construction project.

V. GEOTECHNICAL DATA REPORT

A Geotechnical Memorandum was prepared and utilized by the Engineer in preparation of the contract documents. The Geotechnical Memorandum is included with the bidding documents.

VI. POTENTIALLY CONFLICTING PROJECTS

None.

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly by

ACEC

AMERICAN COUNCIL OF ENGINEERING COMPANIES



ASCE American Society
of Civil Engineers

P/E National Society of
Professional Engineers
Professional Engineers in Private Practice

AMERICAN COUNCIL OF ENGINEERING COMPANIES

ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AMERICAN SOCIETY OF CIVIL ENGINEERS

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A Practice Division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

Endorsed by



CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

Copyright © 2007 National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

Associated General Contractors of America
2300 Wilson Boulevard, Suite 400, Arlington, VA 22201-3308
(703) 548-3118
www.agc.org

The copyright for this EJCDC document is owned jointly by the four EJCDC sponsoring organizations and held in trust for their benefit by NSPE.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1 – Definitions and Terminology	7
1.01 Defined Terms	7
1.02 Terminology.....	11
Article 2 – Preliminary Matters	12
2.01 Delivery of Bonds and Evidence of Insurance.....	12
2.02 Copies of Documents	12
2.03 Commencement of Contract Times; Notice to Proceed.....	12
2.04 Starting the Work.....	13
2.05 Before Starting Construction.....	13
2.06 Preconstruction Conference; Designation of Authorized Representatives	13
2.07 Initial Acceptance of Schedules	13
Article 3 – Contract Documents: Intent, Amending, Reuse	14
3.01 Intent	14
3.02 Reference Standards.....	14
3.03 Reporting and Resolving Discrepancies	15
3.04 Amending and Supplementing Contract Documents	15
3.05 Reuse of Documents	16
3.06 Electronic Data	16
Article 4 – Availability of Lands; Subsurface and Physical Conditions; Hazardous Environmental Conditions; Reference Points	16
4.01 Availability of Lands	16
4.02 Subsurface and Physical Conditions.....	17
4.03 Differing Subsurface or Physical Conditions	17
4.04 Underground Facilities	19
4.05 Reference Points	20
4.06 Hazardous Environmental Condition at Site	20
Article 5 – Bonds and Insurance	22
5.01 Performance, Payment, and Other Bonds.....	22
5.02 Licensed Sureties and Insurers.....	22
5.03 Certificates of Insurance.....	22
5.04 Contractor’s Insurance	23
5.05 Owner’s Liability Insurance.....	24
5.06 Property Insurance	24
5.07 Waiver of Rights	26
5.08 Receipt and Application of Insurance Proceeds.....	27

5.09	Acceptance of Bonds and Insurance; Option to Replace	27
5.10	Partial Utilization, Acknowledgment of Property Insurer	27
Article 6 – Contractor’s Responsibilities		28
6.01	Supervision and Superintendence	28
6.02	Labor; Working Hours	28
6.03	Services, Materials, and Equipment	28
6.04	Progress Schedule	29
6.05	Substitutes and “Or-Equals”	29
6.06	Concerning Subcontractors, Suppliers, and Others	31
6.07	Patent Fees and Royalties	33
6.08	Permits.....	33
6.09	Laws and Regulations	33
6.10	Taxes	34
6.11	Use of Site and Other Areas	34
6.12	Record Documents.....	35
6.13	Safety and Protection	35
6.14	Safety Representative.....	36
6.15	Hazard Communication Programs	36
6.16	Emergencies.....	36
6.17	Shop Drawings and Samples	36
6.18	Continuing the Work.....	38
6.19	Contractor’s General Warranty and Guarantee	38
6.20	Indemnification	39
6.21	Delegation of Professional Design Services	40
Article 7 – Other Work at the Site		41
7.01	Related Work at Site	41
7.02	Coordination.....	41
7.03	Legal Relationships	42
Article 8 – Owner’s Responsibilities		42
8.01	Communications to Contractor.....	42
8.02	Replacement of Engineer.....	42
8.03	Furnish Data	42
8.04	Pay When Due	42
8.05	Lands and Easements; Reports and Tests.....	42
8.06	Insurance	42
8.07	Change Orders	43
8.08	Inspections, Tests, and Approvals	43
8.09	Limitations on Owner’s Responsibilities	43
8.10	Undisclosed Hazardous Environmental Condition.....	43
8.11	Evidence of Financial Arrangements.....	43
8.12	Compliance with Safety Program.....	43
Article 9 – Engineer’s Status During Construction.....		43
9.01	Owner’s Representative	43
9.02	Visits to Site	43

9.03	Project Representative.....	44
9.04	Authorized Variations in Work.....	44
9.05	Rejecting Defective Work	44
9.06	Shop Drawings, Change Orders and Payments	45
9.07	Determinations for Unit Price Work	45
9.08	Decisions on Requirements of Contract Documents and Acceptability of Work	45
9.09	Limitations on Engineer’s Authority and Responsibilities.....	45
9.10	Compliance with Safety Program.....	46
Article 10 – Changes in the Work; Claims.....		46
10.01	Authorized Changes in the Work.....	46
10.02	Unauthorized Changes in the Work	46
10.03	Execution of Change Orders.....	47
10.04	Notification to Surety.....	47
10.05	Claims.....	47
Article 11 – Cost of the Work; Allowances; Unit Price Work.....		48
11.01	Cost of the Work	48
11.02	Allowances	51
11.03	Unit Price Work.....	51
Article 12 – Change of Contract Price; Change of Contract Times		52
12.01	Change of Contract Price	52
12.02	Change of Contract Times.....	53
12.03	Delays.....	53
Article 13 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work.....		54
13.01	Notice of Defects	54
13.02	Access to Work.....	54
13.03	Tests and Inspections	54
13.04	Uncovering Work.....	55
13.05	Owner May Stop the Work	56
13.06	Correction or Removal of Defective Work	56
13.07	Correction Period.....	56
13.08	Acceptance of Defective Work.....	57
13.09	Owner May Correct Defective Work.....	57
Article 14 – Payments to Contractor and Completion		58
14.01	Schedule of Values.....	58
14.02	Progress Payments	58
14.03	Contractor’s Warranty of Title	61
14.04	Substantial Completion.....	61
14.05	Partial Utilization	62
14.06	Final Inspection.....	62
14.07	Final Payment.....	63
14.08	Final Completion Delayed	64
14.09	Waiver of Claims.....	64

Article 15 – Suspension of Work and Termination	64
15.01 Owner May Suspend Work	64
15.02 Owner May Terminate for Cause.....	64
15.03 Owner May Terminate For Convenience	66
15.04 Contractor May Stop Work or Terminate.....	66
Article 16 – Dispute Resolution	67
16.01 Methods and Procedures	67
Article 17 – Miscellaneous.....	67
17.01 Giving Notice.....	67
17.02 Computation of Times.....	67
17.03 Cumulative Remedies	68
17.04 Survival of Obligations	68
17.05 Controlling Law	68
17.06 Headings.....	68

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
 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. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
 5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
 7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
 8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
 9. *Change Order*—A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
 10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
 11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.
27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *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.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

39. *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.
40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *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 at the Site.
44. *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.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *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 Subcontractor.
48. *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 those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

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

1.02 *Terminology*

- A. The words and terms discussed in Paragraph 1.02.B through F 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 Paragraph 9.09 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 14.04 or 14.05).

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. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.
- 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. 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 Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 Copies of Documents

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 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 Agreement 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

Agreement. 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 Agreement, whichever date is earlier.

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;
 - 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.

2.06 *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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *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 2.05.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 component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

- A. Standards, Specifications, Codes, Laws, and Regulations
 1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 2. No provision of any such standard, specification, manual, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. 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 Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier 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
 2. 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.
- 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.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *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. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *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 contiguous to the Site; and
2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from 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 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any

of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for 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 such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have

been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *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.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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 any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall

immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. 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 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. 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: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner 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 created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H

shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 Performance, Payment, and Other Bonds

- A. Contractor shall furnish performance and payment bonds, 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 Documents. 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 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds 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 each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, 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 requirements of Paragraphs 5.01.B and 5.02.

5.02 Licensed Sureties and Insurers

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 Certificates of Insurance

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which 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:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. 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; and
 - 6. 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.
- B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and 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;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, 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.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full 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 interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
 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, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, 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.
 3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 5. allow for partial utilization of the Work by Owner;
 6. include testing and startup; and
 7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes

property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies 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 of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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 as trustee 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 utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.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, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *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. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- 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.

6.02 *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. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *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.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All 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.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
1. "*Or-Equal*" Items: If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 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; and
 - 3) it has a proven record of performance and availability of responsive service.
 - 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.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. 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:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) 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
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and

- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable

objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. 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 any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
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 moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *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.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *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 knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

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

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner 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 claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

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

- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

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

6.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- 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 6.13.A.2 or 6.13.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 (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 for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

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

6.15 *Hazard Communication Programs*

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

6.16 *Emergencies*

- A. In 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.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*
 - a. Submit number of copies specified in the General Requirements.
 - 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 6.17.D.
 2. *Samples:*
 - a. Submit number of Samples specified in the Specifications.
 - b. 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 6.17.D.
- B. 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. *Submittal Procedures:*
1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - 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 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 and approval of that 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 both a written communication separate from the Shop

Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

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 (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval 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 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

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.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner 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 representation of 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 or the issuance of a notice of acceptability by Engineer;
 6. any inspection, test, or approval by others; or
 7. any correction of defective Work by Owner.

6.20 *Indemnification*

- A. 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 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 6.20.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 6.20.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.

6.21 *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 law.
- 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, Shop Drawings 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 6.21, 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 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
1. written notice thereof will be given to Contractor prior to starting any such other work; and
 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 3. the extent of such authority and responsibilities will be provided.

- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

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

8.03 *Furnish Data*

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

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *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.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *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.

8.12 *Compliance with Safety Program*

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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *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 Documents.

9.02 *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 9.09. 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.

9.03 *Project Representative*

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. 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.

9.04 *Authorized Variations in Work*

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.
- B. In connection with 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, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an 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 Paragraph 10.05.

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

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of

any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, 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 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
 2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
 3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *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.

10.05 *Claims*

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions

of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
 2. approve the Claim; or
 3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 Cost of the Work

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, 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, 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 11.01.
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 5.06.D), 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 telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.

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

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, 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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

- C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.
- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 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:*
 - 1. Contractor agrees that:
 - a. 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
 - b. 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:*
 - 1. 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.

11.03 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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

- 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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 Change of Contract Price

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:
 - 1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 - 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 - 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:
 - 1. a mutually acceptable fixed fee; or
 - 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

- b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;
- c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and 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 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 Price or the Contract Times, or both. 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.

- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is 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 described in this Paragraph 12.03.C.
- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests 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.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.
- 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 and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
 - E. 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.
 - F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. 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, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *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, 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.

13.06 *Correction or Removal of Defective Work*

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *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 land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. repair such defective land or areas; or
 - 2. correct such defective Work; or
 - 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 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. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other

dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- 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 13.07, 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 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and for the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site 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 (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 Schedule of Values

- A. The Schedule of Values established as provided in Paragraph 2.07.A 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.

14.02 Progress Payments

A. 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 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.

B. Review of Applications:

1. Engineer will, within 10 days after receipt of each Application for Payment, 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 9.07, 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 Documents; 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 moneys 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 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
 - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or
 - d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor remedies the reasons for such action.
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 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

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

14.04 *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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- 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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion,

Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

- E. 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 tentative list.

14.05 *Partial Utilization*

- 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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04.A through D for that part of the Work.
 - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

14.06 *Final Inspection*

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

14.07 *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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner 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.

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 Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. 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. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

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

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
 2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
 3. Contractor's repeated disregard of the authority of Engineer; or
 4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
 2. 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
 3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.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 all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph, Owner shall not be required to obtain the lowest price for the Work performed.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *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;
 3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
 4. reasonable expenses directly attributable to termination.
- B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) 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 15.03.
- 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 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION

16.01 Methods and Procedures

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 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 to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 Computation of Times

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

17.03 *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 Documents. 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.

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

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

17.06 *Headings*

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

Equal Employment Opportunity (EEO) Requirements
(Required Contract Provision)

The Contractor's EEO Certification Form provided on the following page must be:

- (1) included in the contract documents and
- (2) referenced in the Instructions to Bidders, informing bidders that the form must be completed and submitted with their bid.

NOTE: If the loan applicant has its own EEO requirements, local procedures and forms may be substituted for the EPA form.

Contractor Equal Employment Opportunity Certification

During the performance of this contract, the undersigned agrees as follows:

1. The undersigned will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The undersigned will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The undersigned agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this equal opportunity (federally assisted construction) clause.
2. The undersigned will, in all solicitations or advertisements for employees placed by or on behalf of the undersigned, state the all qualified applicants will receive consideration for employment without regard to race, color, religion, sex or national origin.
3. The undersigned will send to each labor union or representative of workers, with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representative of the undersigned's commitment under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
4. The undersigned will comply with all provisions of Executive Order No. 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
5. The undersigned will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, and by the rules, regulations, and relevant orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts by the administering agency of the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
6. In the event of the undersigned's non-compliance with the equal opportunity (federally assisted construction) clause of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part, and the undersigned may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order No 11246 of September 24, 1965, or by rules, regulations, or order of the Secretary of Labor, or as provided by law.
7. The undersigned will include this equal opportunity (federally assisted construction) clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order No 11246 of September 24, 1965, so that such provision will be binding upon each subcontract or vender. The undersigned will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for non compliance: Provided, however, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor, as a result of such direction by the administering agency the undersigned may request the United States to enter into such litigation to protect the interest of the United States.

(Signature)

(Date)

(Name and Title of Signer, Please type)

(Firm Name)

Debarment Requirements

(Required Contract Provision)

The Certification Regarding Debarment, Suspension, and Other Responsibility Matters form included on the following page must be:

- (1) included in the contract documents and
- (2) referenced in the Instructions to Bidders, informing bidders that the form must be completed and submitted with their bid.

Certification Regarding Debarment, Suspension, and Other Responsibility Matters
INSTRUCTIONS

Under Executive Order 12549 an individual or organization debarred or excluded from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program or a subagreement thereunder for \$25,000 or more.

Accordingly, each prospective recipient of an EPA grant, loan, or cooperative agreement and any contract or subagreement participant thereunder must complete the attached certification provide an explanation why they cannot. For further details, see the regulation 40 CFR 32.510, Participants' responsibilities.

Go to <https://sam.gov/content/exclusions> to search for excluded parties. The record includes information regarding entities debarred, suspended, proposed for debarment, excluded or disqualified under the nonprocurement common rule, or otherwise declared ineligible from receiving Federal contracts, certain subcontracts, and certain Federal assistance and benefits. This information may include names, addresses, DUNS numbers, Social Security Numbers, Employer Identification Numbers or other Taxpayer Identification Numbers, if available and deemed appropriate and permissible to publish by the agency taking the action.

Where To Submit

The prospective EPA grant, loan, or cooperative agreement recipient must return the signed certification or explanation with its application to Ohio EPA.

A prospective prime contractor must submit a complete certification or explanation to the individual or organization awarding the contract.

Each prospective subcontractor must submit a complete certification or explanation to the prime contractor for the project.

Applicants may reproduce these materials as needed and provide them to their prospective prime contractor, who, in turn, may reproduce and provide them to prospective subcontractors.

Additional copies / assistance may be requested from:

Ohio EPA
Division of Environmental and Financial Assistance
P.O. Box 1049
Columbus, Ohio 43216-1049
(614) 644-2798
www.epa.ohio.gov/defa/

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

- (a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;
- (b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (b) of this certification;
- (d) Have not within a three year period preceding this application / proposal had one or more public transactions (Federal, State, or local) terminated for cause or default; and
- (e) Will not utilize a subcontractor or supplier who is unable to certify (a) through (d) above.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

Type Name & Title of Authorized Representative

Signature of Authorized Representative

Date

I am unable to certify to the above statements. My explanation is attached.

Disadvantaged Business Enterprises (DBE) Utilization

(Required Contract Provision)

USEPA has a program to encourage the participation of disadvantaged businesses in the construction activities funded by the Clean Water and Drinking Water SRF's. "DBE" is an all inclusive term that includes Minority Business Enterprises (MBE), Women Business Enterprises (WBE), Small Business Enterprises (SBE), Small Business in Rural Areas (SBRA), HUBZone Small Business, Labor Surplus Area Firms (LSAF), and other entities defined as socially and/or economically disadvantaged. While the WPCLF and WSRLA strongly encourage participation by all disadvantaged groups, specific participation goals are negotiated with USEPA only for Minority Business Enterprises and Women's Business Enterprises.

Goals

As a condition of receiving capitalization grants from U.S. EPA for the Water Pollution Control Loan Fund (WPCLF) and the Water Supply Revolving Loan Account (WSRLA), the Ohio EPA negotiates "fair share" Disadvantaged Business Enterprises (DBE) objectives with U.S. EPA. The current negotiated goals for construction related activities are 1.3% of all contracts to MBEs and 1.0% of all contracts to WBEs.

DBE Certification

Under the DBE program, qualified DBE's are those that have been certified as an MBE or WBE. Certifications can be obtained from a federal agency such as the Small Business Administration or the Department of Transportation or by an approved State agency. The Unified Certification Program (UCP) administered by the Ohio Department of Transportation (ODOT) can provide the necessary DBE certifications. Information on the UCP can be found at www.ohioucp.org as well as the ODOT website www.dot.state.oh.us/divisions/equalopportunity/pages/dbe.aspx.

DBE Qualifications

To qualify for MBE certification, businesses must be 51 percent owned and controlled by a U.S. citizen and Ohio resident belonging to an African American, Native American, Hispanic, or Asian American ethnic group. In addition, the business must be in operation for at least one year prior to submitting an application. For DBE status, a business must be at least 51 percent owned by a socially and economically disadvantaged person who participates in the daily operations of the business. This person must be a woman or of African-American, Hispanic, Native American, Asian American ethnicity.

Program Requirements

To comply with DBE program requirements the WPCLF/WSRLA loan recipient must do the following:

1. Create and maintain a bidder's list (see description below)

2. Include contract conditions applicable to the DBE program in all procurement contracts entered into by the Borrower for all WPCLF and WSRLA projects. These conditions are listed below.
3. Follow, document, and maintain documentation of good faith efforts on the part of prime contractors to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project.
4. Review the Form 6100-3 and 6100-4 submittals provided by bidders on the project for completeness and obtain any additional information necessary to verify the certification status of all proposed subcontractors.
5. Obtain documentation of the good faith efforts of the prime contractor if the prime contractor does not meet the MBE or WBE goal.
6. Obtain a written confirmation from any prime contractor states that they will not meet the MBE and WBE goals because they will not be entering into any agreements for goods or services with any company, firm, joint venture, or individual.
7. Submit the following to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined:
 - Form 6100-3 from each subcontractor
 - Form 6100-4 from each prime contractor
 - a copy of the Good Faith Efforts documentation from any prime contractors that will not meet the MBE and WBE goals,
 - if any of the prime contractors will not meet the MBE and WBE goals because they will not be entering into any agreements for goods or services with any company, firm, joint venture, or individual, a copy of the written confirmation from that prime contractor
8. Report MBE/WBE accomplishments on Form 5700-52A annually (within 15 days after October 1st).

NOTE: It is up to the WPCLF/WSRLA loan recipient whether or not to require completion and submission of Forms 6100-3 and 6100-4 from all bidders with the bid proposal or to accept completion and submission from the successful bidder(s) only at some time after bids are received. Regardless of whether the forms are completed and submitted with the bids or at some later time once the successful bidders are identified, completed forms are to be submitted to Ohio EPA with the bid package.

To comply with DBE program requirements all prime contractors must do the following:

1. Follow, document, and maintain documentation of their good faith efforts.
2. Complete and submit **Form 6100-4 DBE Subcontractor Utilization Summary** as part of the bid proposal package to the loan recipient.
3. Have its Disadvantaged Business Enterprise subcontractors complete **Form 6100-3 DBE Subcontractor Proposed Performance Form** and submit those as part of the bid proposal package to the loan recipient.
4. Provide **Form 6100-2 DBE Subcontractor Actual Participation Form** to all of its Disadvantaged Business Enterprise subcontractors for completion at the end of the work.
5. During construction, provide the data necessary so that the loan recipient can report MBE/WBE accomplishments on Form 5700-52A annually (within 15 days after October 1st).

Bidders List

The Borrower must create, maintain, and use a bidders list for purposes of soliciting both MBE/WBEs and non-MBE/WBEs during procurement of construction, equipment, supplies, and services. This list shall include:

1. Entity's name with point of contact;
2. Entity's mailing address, telephone number, and e-mail address;
3. The procurement on which the entity bid or quoted, and when; and
4. Entity's status as an MBE/WBE or non-MBE/WBE.

Borrowers that receive less than \$250,000 or less in any one fiscal year can be exempt from maintaining a Bidders List.

The Bidders List shall be maintained until the project period has expired and the Borrower is no longer receiving EPA funding. The Bidders List must include all firms that bid on the prime contracts, or bid or gave a quote on subcontracts, including both MBE/WBEs and non-MBE/WBEs.

Required Contract Conditions

The DBE Specification language and instructions to the bidders and Forms 6100-2, 6100-3 and 6100-4 must be included in the contract documents and referenced in the Instructions to Bidders, informing bidders that the forms must be completed and submitted with their bid for all WPCLF and WSRLA projects:

1. The prime contractor must pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the owner.
2. The prime contractor must notify the owner in writing prior to the termination of any Disadvantage Business Enterprise subcontractor for convenience by the prime contractor.
3. If a Disadvantage Business Enterprise contractor fails to complete work under the subcontract for any reason, the prime contractor must employ the six Good Faith Efforts (listed below) if soliciting a replacement contractor.
4. The prime contractor must employ the six Good Faith Efforts even if the prime contractor has achieved its fair share objectives.
5. An owner must ensure that each procurement contract it awards contains the following terms and conditions:

The contractor shall not discriminate on the basis of race, color, national origin or sex in the performance of this contract. The contractor shall carry out applicable requirements of 40 CFR Part 33 in the award and administration of contracts awarded under EPA financial assistance agreements. Failure by the contractor to carry out these requirements is a material breach of this contract which may result in the termination of this contract or other legally available remedies.

Good Faith Efforts

Borrowers and their prime contractors must follow, document, and maintain documentation of their good faith efforts as listed below to ensure that Disadvantaged Business Enterprises (DBEs) have the opportunity to participate in the project by increasing DBE awareness of procurement efforts and outreach.

1. Ensure DBEs are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities; including DBEs on solicitation lists and soliciting them whenever they are potential sources.
2. Make information on forthcoming opportunities available to DBEs and arrange time frames for contracts and establish delivery schedules, where the requirements permit, in a way that encourages and facilitates participation by DBEs in the competitive process. This includes, whenever possible, posting solicitation for bids or proposals for a minimum of 30 calendar days before the bid or proposal closing date.
3. Consider in the contracting process whether firms competing for large contracts could be subcontracted with DBEs. This will include dividing total requirements when economically feasible into smaller tasks or quantities to permit participation by DBEs in the competitive process.
4. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
5. Use the services and assistance of the Small Business Administration and the Minority Business Development Agency of the U.S. Department of Commerce.
6. If the prime contractor awards subcontracts, require the prime contractor to take the steps in numbers 1 through 5 above.

DBE Forms

Form 6100-3 – Each prime contractor must have its DBE subcontractors complete **Form 6100-3 DBE Subcontractor Proposed Performance Form**. This form gives the DBE subcontractor the opportunity to report the scope and cost of the subcontract and it should be forwarded to the Prime Contractor along with the DBE's quote. Each subcontractor completes one Form 6100-3. The Borrower must submit all Form 6100-3 forms to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined.

Form 6100-4 – Each prime contractor must complete and submit **Form 6100-4 DBE Subcontractor Utilization Summary** as part of the prime contractor's bid proposal package to the Borrower. This form summarizes the Prime Contractor's intended use of identified DBE(s) and the estimated dollar amount of each subcontract. Only one Form 6100-4 form is required from each Prime Contractor. The Borrower must submit this form to the Ohio EPA/DEFA as part of the bid package upon which the WPCLF/WSRLA loan amount is determined.

Form 6100-2 - The prime contractor must provide **Form 6100-2 DBE Subcontractor Actual Participation Form** to all of its Disadvantaged Business Enterprise subcontractors.

This form gives the DBE subcontractor the opportunity to describe the work the DBE received from the Prime Contractor, how much the DBE was paid and any other concerns the DBE might have. Disadvantaged Business Enterprise subcontractors must send completed Form 6100-2 directly to the Region 5 DBE Coordinator after the work by the subcontractor is done and is NOT submitted with the bid package to Ohio EPA.

Region 5 MBE/WBE Coordinator
USEPA, Acquisition and Assistance Branch
77 West Jackson Boulevard (MC-10J)
Chicago, IL 60604

Reporting During Construction – Form 5700-52A

The purpose of MBE/WBE reporting is to monitor the grant recipient's accomplishments in utilizing MBEs and WBEs; and adherence to the good faith efforts (i.e., outreach to MBEs, WBEs, and other DBEs); and progress in achieving MBE and WBE Goals. During the progress of the construction project, the loan recipient must complete & submit Form 5700-52A annually (**within 15 days after October 1st**). If there were no MBEs or WBEs utilized, or no procurement expenditures of any kind were made during the reporting period, a "negative report" is still required.

Reports are to be sent to:

Florel Fraser, Ohio EPA – DEFA
P.O. Box 1049
Columbus, OH 43216-1049
E-mail address: Florel.Fraser@epa.ohio.gov
Phone: (614) 644-3636

**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form**

This form is intended to capture the DBE¹ subcontractor's² description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

Subcontractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Prime Contractor Name		Issuing/Funding Entity:	

Contract Item Number	Description of Work Submitted to the Prime Contractor Involving Construction, Services, Equipment or Supplies	Price of Work Submitted to the Prime Contractor
DBE Certified By: <input type="radio"/> ODOT <input type="radio"/> DAS/EDGE <input type="radio"/> Other: _____		Meets/ exceeds EPA certification standards? <input type="radio"/> YES <input type="radio"/> NO <input type="radio"/> Unknown

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Performance Form**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 I.

Prime Contractor Signature	Print Name
Title	Date

Subcontractor Signature	Print Name
Title	Date

**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form**

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE¹ subcontractors² and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

Prime Contractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Issuing/Funding Entity:			

I have identified potential DBE certified subcontractors	___YES	___NO	
If yes, please complete the table below. If no, please explain:			
Subcontractor Name/ Company Name	Company Address/ Phone/ Email	Est. Dollar Amt.	Currently DBE Certified?
	Continue on back if needed		

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Utilization Form**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 I.

Prime Contractor Signature	Print Name
Title	Date

**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form**

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE¹ subcontractor² the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

Subcontractor Name		Project Name	
Bid/ Proposal No.	Assistance Agreement ID No. (if known)	Point of Contact	
Address			
Telephone No.		Email Address	
Prime Contractor Name		Issuing/Funding Entity:	

Contract Item Number	Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies	Amount Received by Prime Contractor

¹ A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

² Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

**Disadvantaged Business Enterprise (DBE) Program
DBE Subcontractor Participation Form**

Please use the space below to report any concerns regarding the above EPA-funded project:

Subcontractor Signature	Print Name
Title	Date

ALERT

“Total Procurement” fields and “MBE/WBE Combined Procurement” fields located in section 4B of this form should include Federal funds provided under the assistance agreement, recipient matching funds, and funds from other sources that are included in the assistance agreement.

Due to process time of Paperwork Reduction Act procedures, EPA is not able to update the [EPA Form 5700-52A](#) immediately to reflect this clarification.

If EPA grant recipients have questions about [EPA Form 5700-52A](#), please work with your respective Grants Specialist or [DBE Coordinator](#).



U.S. ENVIRONMENTAL PROTECTION AGENCY MBE/WBE UTILIZATION UNDER FEDERAL GRANTS AND COOPERATIVE AGREEMENTS

This collection of information is approved by OMB under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. (OMB Control No. 2030-0020). Responses to this collection of information are required to obtain an assistance agreement (40 CFR Part 30, 40 CFR Part 31, and 40 CFR Part 33 for awards made prior to December 26, 2014, and 2 CFR 200, 2 CFR 1500, and 40 CFR Part 33 for awards made after December 26, 2014). An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number. The public reporting and recordkeeping burden for this collection of information is estimated to be 1 hour per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates and any suggested methods for minimizing respondent burden to the Regulatory Support Division Director, U.S. Environmental Protection Agency (2821T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

1A. REPORTING PERIOD October 1, _____ – September 30, _____		1B. REPORT TYPE <input type="checkbox"/> Annual <input type="checkbox"/> Final Report (Project completed)													
1C: Revision of a Prior Year Report? <input type="radio"/> No <input type="radio"/> Yes If yes, what reporting period is being revised and briefly describe the changes made. Note: The revised report will replace the associated original report in its entirety.															
2A. RECIPIENT UNIQUE ENTITY IDENTIFIER 															
2B. RECIPIENT REPORTING CONTACT Name: Email: Phone:															
3. FEDERAL AWARD IDENTIFICATION NUMBER (FAIN) (For SRF state recipients, please include all numbers for all open assistance agreements being reported on this form.)															
4A. If NO procurements were made this reporting period (by the recipient, sub-recipient(s), loan recipient(s), and prime contractor(s)), CHECK and SKIP to Block No. 6. (Procurements are all expenditures through contract, order, purchase, lease or barter of supplies, equipment, construction, or services needed to complete Federal assistance programs.) <input type="checkbox"/>															
4B. Total Procurements & MBE/WBE Accomplishments This Reporting Period (in dollars) <table style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 20%; text-align: center;">Construction</th> <th style="width: 20%; text-align: center;">Non-Construction</th> <th style="width: 30%; text-align: center;">Total</th> </tr> </thead> <tbody> <tr> <td>Total Procurement:</td> <td style="text-align: center;">\$ _____</td> <td style="text-align: center;">\$ _____</td> <td style="text-align: center;">\$ _____</td> </tr> <tr> <td>MBE/WBE Combined Procurement:</td> <td style="text-align: center;">\$ _____</td> <td style="text-align: center;">\$ _____</td> <td style="text-align: center;">\$ _____</td> </tr> </tbody> </table>					Construction	Non-Construction	Total	Total Procurement:	\$ _____	\$ _____	\$ _____	MBE/WBE Combined Procurement:	\$ _____	\$ _____	\$ _____
	Construction	Non-Construction	Total												
Total Procurement:	\$ _____	\$ _____	\$ _____												
MBE/WBE Combined Procurement:	\$ _____	\$ _____	\$ _____												
5A. Good Faith Efforts: If procurements were made, indicate whether your organization has followed the six Good Faith efforts found in 40 CFR Part 33, Subpart C, 40 CFR 33.501 and 2 CFR 200.321. <input type="checkbox"/> Yes, my organization has implemented and documented each of the six Good Faith Efforts on the procurements made during this reporting period. <input type="checkbox"/> No, my organization has not implemented and documented each of the six Good Faith Efforts on the procurements made during this reporting period.		5B. If procurements were made, but no MBE/WBE procurements are being reported, then check the applicable box(es) for the reason(s) why no MBE/WBE procurements were made. <input type="checkbox"/> No MBE/WBE(s) applied <input type="checkbox"/> No MBE/WBE(s) were qualified <input type="checkbox"/> Other:													
6. NAME OF RECIPIENT'S AUTHORIZED REPRESENTATIVE		TITLE													
7. SIGNATURE OF RECIPIENT'S AUTHORIZED REPRESENTATIVE		DATE													

Instructions:

A. General Instructions:

MBE/WBE utilization is based on 40 CFR Part 33 and 2 CFR Parts 200 and 1500. The reporting requirement reflects the change in the reporting threshold described in Recipient/ Applicant Information Notice-2018-G04 issued by EPA's Office of Grants and Debarment on September 7, 2018 (<https://www.epa.gov/grants/rain-2018-g04>). EPA Form 5700-52A must be completed annually by recipients of financial assistance agreements where the combined total of funds budgeted for procuring supplies, equipment, construction and services exceeds the current Simplified Acquisition Threshold as set by the Federal Acquisition Regulation at 48 CFR Subpart 2.1. This reporting requirement applies to all new and existing awards and voids all previous reporting requirements.

In determining whether the threshold is exceeded for a particular assistance agreement, the analysis must focus on funds budgeted for procurement under the supplies, equipment, construction, services or "other" categories, and include funds budgeted for procurement under sub- awards or loans.

Reporting will also be required in cases where the details of the budgets of sub-awards/loans are not clear at the time of the grant awards and the combined total of the procurement and sub-awards and/or loans exceeds the Simplified Acquisition Threshold.

For example, if the Simplified Acquisition Threshold is \$250,000, then if a recipient has \$300,000 budgeted under procurement, then completion of this report is required.

When reporting is required, all procurement actions are reportable, not just the portion which exceeds the Simplified Acquisition Threshold.

If at the time of award the budgeted funds exceed the Simplified Acquisition Threshold but actual expenditures fall below, a report is still required.

If at the time of award, the combined total of funds budgeted for procurements in any category is less than or equal to the Simplified Acquisition Threshold and is

maintained below the threshold, no DBE report is required to be submitted.

Recipients are required to report 30 days after the end of each federal fiscal year (i.e. October 30th), per the terms and conditions of the financial assistance agreement.

Final reports are due October 30th or 120 days after the end of the project period, whichever comes first.

MBE/WBE program requirements, including reporting, are material terms and conditions of the financial assistance agreement. Failure to comply may lead to termination of the financial assistance agreement which is then reported to the OMB-designated integrity and performance system accessible through SAM (currently FAPIIS) pursuant to 2 CFR 200.339(b).

B. Submission:

Recipients must submit completed forms to the point of contact associated with the awarding office for the applicable assistance agreement.

Information on specific points of contact for EPA's Headquarters and ten Regional Offices is located at:

<https://www.epa.gov/grants/frequently-asked-questions-disadvantaged-business-enterprises>

Questions regarding the completion of this form should be directed to the DBE Coordinator associated with the awarding office for the applicable assistance agreement. A list of the DBE Coordinators for each awarding office can be located here:

<https://www.epa.gov/grants/epa-dbe-program-coordinators>

c. Instructions:

1A. Specify Federal fiscal year this report covers. The Federal fiscal year runs from October 1st through September 30th (**e.g. November 29, 2020 falls within Federal fiscal year 2021**)

1B. Specify report type. Check the annual reporting box if this is an annual report. If it is a final report, check the final report box to indicate if the project is completed.

1C. Indicate if this is a revision to a previous year and provide a brief description of the revision you are making including what reporting period is being revised. The revised report will replace the associated original report in its entirety.

2A. Provide your organization's Unique Entity Identifier. More information about Unique Entity Identifier, including its meaning, can be found in 2 CFR Part 25.

2B. Identify the name and contact information for the person located within the recipient organization that can be contacted if questions arise from this report.

3. Provide the Federal Award Identification Number (FAIN) assigned by EPA. A separate report must be submitted for each Assistance Agreement.

***For SRF recipients:** In box 3 list numbers for ALL OPEN Assistance Agreements being reported on this form.

4A. Self-explanatory. **Note:** Procurement means expenditures under the supplies, equipment, construction, services or "other" categories, and include funds expended for procurement under sub-awards or loans.

4B. Provide the total dollar amount (in dollars) of **ALL** procurements awarded this reporting period by construction, non-construction, and grand total by the recipient, sub-recipients, and SRF loan recipients, **including** MBE/WBE expenditures, not just the portion which exceeds the threshold. For example: Actual dollars for procurement from the procuring office; actual contracts let from the contracts office; actual goods, services, supplies, etc., from other sources including the central purchasing/ procurement centers).

Provide the total dollar amount (in dollars) of MBE/WBE procurements **ONLY** awarded this reporting period by construction, non-construction, and grand total by the recipient, sub-recipients, SRF loan recipients, and prime contractors not just the portion which exceeds the threshold.

***For SRF recipients only:** In 4B, please enter the total annual procurement amount under all of your SRF Assistance Agreements. The figure reported in this section is **not** directly tied to an individual Assistance Agreement identification number. **(SRF state recipients report state procurements in this section)**

5A. Self-explanatory.

5B. If procurements were made during this reporting period, but no procurements with MBE(s) or WBE(s) are being reported, then select the reason why. If "Other" is chosen, please fill in with the reason.

6. Self-explanatory.

7. Self-explanatory.

****This data is requested to comply with provisions mandated by: statute or regulations (40 CFR Part 33 and/or 2 CFR Parts 200 and 1500); OMB Circulars; or added by EPA to ensure sound and effective assistance management. Accurate, complete data are required to obtain funding, while no pledge of confidentiality is provided.**

Davis-Bacon Wage Rate Requirements

(required contract provision)

Background and Applicability

On October 30, 2009, P.L. 111-88, "Making appropriations for the Department of the Interior, environment, and related agencies for the fiscal year ending September 30, 2010, and for other purposes," was enacted. This law provides appropriations for both the Clean Water State Revolving Fund (CWSRF) and the Drinking Water State Revolving Fund (DWSRF) for Fiscal Year 2010, while adding new requirements to these already existing programs. One new requirement requires the application of Davis-Bacon Act requirements.

Application of the Davis-Bacon Act requirements extend not only to assistance agreements funded with Fiscal Year 2010 appropriations, but to all assistance agreements executed on or after October 30, 2009, whether the source of the funding is prior year's appropriations, state match, bond proceeds, interest earnings, principal repayments, or any other source of funding so long as the project is financed by an SRF assistance agreement. If a project began construction prior to October 30, 2009 but is financed or refinanced through an assistance agreement executed on or after October 30, 2009, Davis-Bacon Act requirements will apply to all construction that occurs on or after October 30, 2009, through completion of construction.

Ohio EPA Responsibilities

With respect to the Water Pollution Control Loan Fund (WPCLF) and Water Supply Revolving Loan Account (WSRLA) revolving funds, EPA provides capitalization grants to each State which in turn provides funding assistance to eligible recipients within the State. Typically, the assistance recipients are municipal or other local governmental entities that manage the funds. Occasionally, the assistance recipients may be a private for profit or not for profit entity. Although EPA and the State are responsible for ensuring assistance recipients incorporate the wage rate requirements set forth herein as part of contracts for WPCLF and WSRLA funding, the assistance recipient has the primary responsibility to maintain payroll records and for compliance with Davis-Bacon Act requirements as described below.

Municipal Or Other Local Governmental Entities Recipient's Responsibilities

The following is intended to help assistance recipients understand and meet their obligations related to Davis-Bacon (DB). Each assistance recipients should, however, review the contract/subcontract requirements that are set forth later in this document for a more full understanding of DB obligations.

Prior to advertising for bids:

- > Obtain the wage determination for the locality in which a covered activity subject to DB will take place from the Department of Labor (DOL) at www.wdol.gov.
- > Incorporate these wage determinations into the request for bids.
- > Include the required contract provisions (see below) into the contract documents.
- > Require prime contracts to include provisions that subcontractors follow the wage determination incorporated into the prime contract.

During the advertisement period:

- > Monitor www.wdol.gov on a weekly basis to ensure that the wage determination contained in the request for bids remains current.
- > If DOL modifies the DB wage determination more than 10 days prior to the bid opening, issue an addendum reflecting the modification.
- > If DOL modifies or supersedes the DB wage determination less than 10 days prior to bid opening and you cannot issue an addendum for the change, you must request a finding from Ohio EPA that there is not reasonable time to notify interested contractors of the modification of the wage determination. The Ohio EPA will give you a report of its findings.

After opening bids:

- > If the contract(s) aren't awarded within 90 days of the bid opening you must monitor www.wdol.gov on a weekly basis to ensure that wage determinations used in the bids remain current.
- > If the contract(s) aren't awarded within 90 days of the bid opening, any modifications or supersedes that DOL makes to the wage determination must be incorporated into the contract unless (1) you request an extension from Ohio EPA AND (2) Ohio EPA obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv).

After contracts are signed and during construction:

- > Review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.
- > DOL may issue a revised wage determination applicable to one or all of your contracts after the award of the contract or execution of the change order which incorporated DB requirements into the contract if DOL determines that you have failed to incorporate a wage determination or have used a wage determination that clearly does not apply to the contract. If this occurs, you shall either terminate the contract or change order and rebid the contract OR incorporate DOL's wage determination retroactive to the beginning of the contract by change order. The contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.
- > Periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a)(6), all interviews must be conducted in confidence. You must use Standard Form 1445 or equivalent documentation to memorialize the interviews.
- > Establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, you must:
 - conduct all interviews in confidence.
 - conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract.
 - conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB.
 - immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements.
- > Periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. You must:
 - establish and follow a spot check schedule based on your assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract.
 - spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract at a minimum.
 - conduct more frequent spot checks if the initial spot check or other information indicates that there

is a risk that the contractor or subcontractor is not complying with DB.

- during the examinations, verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

> Periodically review contractors' and subcontractors' use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the DOL or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews.

> Immediately report potential violations of the DB prevailing wage requirements to Andrew Lausted at EPA Region V at 312-886-0189 and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/esa/contacts/whd/america2.htm>.

If contracts have already been signed and DB requirements need to be incorporated:

> If contracts have already been signed prior to WPCLF/WSRLA funding being provided, you must issue a change order, task order, work assignment or similar legally binding instrument and incorporate the appropriate DOL wage determination from www.wdol.gov as well as the required contract provisions into the contract(s).

> Initiate the contractor and subcontractor review and wage interview requirements as described above and provided in the **Contract And Subcontract Provisions**.

**Private For Profit Or Not For Profit (Non-Governmental) Entities
Recipient's Responsibilities**

The requirements, responsibilities and contract provisions for Private For Profit or Not For Profit Entities (Non-Governmental Entities) is exactly the same as for Municipal Or Other Local Governmental Entities EXCEPT for the following:

Prior to advertising for bids:

> Obtain the proposed wage determinations for specific localities from www.wdol.gov.

> Submit the wage determination to Ohio EPA for approval prior to inserting the wage determination into the solicitation unless subsequently directed otherwise by Ohio EPA.

Contract And Subcontract Provisions For Contracts In Excess Of \$2,000

The following language must be included in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or in part with WPCLF or WSRLA funds and which is subject to the labor standards provisions of any of the acts listed in §5.1:

NOTE: Modify the first sentence to include the name of the WPCLF/WSRLA funding recipient prior to including these provisions in the contract documents.

Wage Rate Requirements

As used in these provisions "subrecipient" means _____ (fill in WPCLF/WSRLA funding recipient name here).

(a) The following applies to any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public

work, or building or work financed in whole or in part from Federal funds or in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1.

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in § 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a)(1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

Subrecipients may obtain wage determinations from the U.S. Department of Labor's web site, www.wdol.gov.

(ii)(A) The subrecipient(s), on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The EPA award official shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the subrecipient(s) agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the subrecipient(s) to the State award official. The State award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department

of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the State award official or will notify the State award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the and the subrecipient(s) do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the questions, including the views of all interested parties and the recommendation of the State award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account asset for the meeting of obligations under the plan or program.

(2) Withholding. The subrecipient(s), shall upon written request of the EPA Award Official or an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the

plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly, for each week in which any contract work is performed, a copy of all payrolls to the subrecipient, that is, the entity that receives the subgrant or loan from the State capitalization grant recipient. Such documentation shall be available on request of the State recipient or EPA. As to each payroll copy received, the subrecipient shall provide written confirmation in a form satisfactory to the State indicating whether or not the project is in compliance with the requirements of 29 CFR 5.5(a)(1) based on the most recent payroll copies for the specified week. The payrolls shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on the weekly payrolls. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at <http://www.dol.gov/esa/whd/forms/wh347instr.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the subrecipient(s) for transmission to the State or EPA if requested by EPA, the State, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the subrecipient(s).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the State, EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency or State may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees --

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe

benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the EPA determines may be appropriate, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and subrecipient(s), State, EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

Contract Provision For Contracts In Excess Of \$100,000 And Subject To The Overtime Provisions Of The Contract Work Hours And Safety Standards Act

The following language must be included in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These provisions are to be included in addition to the provisions for contracts in excess of \$2,000. As used in these paragraphs, the terms laborers and mechanics include watchmen and guards.

(b) Contract Work Hours and Safety Standards Act. The following applies to any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. As used in these paragraphs, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (b)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (b)(1) of this section.

(3) Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (b)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (b)(1) through (4) of this section.

Contract Provision For Contracts In Excess Of \$100,000 Subject ONLY To The Contract Work Hours And Safety Standards Act

In addition to the provisions for contracts in excess of \$2,000, for any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, you must insert clauses requiring:

(c) The following applies to any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1.

The contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid.

The records shall be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Ohio EPA, EPA and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

BUILD AMERICA, BUY AMERICA (BABA) ACKNOWLEDGEMENT

The Contractor acknowledges to and for the benefit of the _____ (“Owner”) and the State of Ohio (State) that it understands the goods and services under this Agreement are being funded with federal monies and have statutory requirements commonly known as “Build America, Buy America;” that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States (“Build America, Buy America Requirements”) including iron and steel, manufactured products, and construction materials provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Owner or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Owner or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Owner for the funding of its project, the Owner and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

Signature

Date

Name and Title of Authorized Signatory, Please Print or Type


Bidder’s Firm



November 3, 2022

MEMORANDUM

SUBJECT: Build America, Buy America Act Implementation Procedures for EPA Office of Water Federal Financial Assistance Programs

FROM: Radhika Fox
Assistant Administrator 

TO: EPA Regional Water Division Directors, Regions I – X
EPA Office of Water Office Directors

OVERVIEW

The Biden-Harris Administration recognized the Nation’s critical need for infrastructure investment, championing the Bipartisan Infrastructure Law (BIL), which Congress passed on November 15, 2021 (also known as the Infrastructure Investment and Jobs Act (IIJA)). The BIL will provide an unprecedented level of federal investment in water and wastewater infrastructure in communities across America.

In Title IX of the IIJA, Congress passed the Build America, Buy America (BABA) Act, which establishes strong and permanent domestic sourcing requirements across all Federal financial assistance programs for infrastructure. The U.S. Environmental Protection Agency (EPA) Office of Water is honored to help lead the implementation of these provisions and is proud of its near decade of successful implementation of the American Iron and Steel (AIS) provisions for its flagship water infrastructure programs.

This is a transformational opportunity to build a resilient supply chain and manufacturing base for critical products here in the United States that will spur investment in good-paying American manufacturing jobs and businesses. EPA’s efforts to implement BABA will help cultivate the domestic manufacturing base for a wide range of products commonly used across the water sector but not currently made domestically. This will take time, and flexibility will be important to ensure that EPA can leverage critical water investments on time and on budget to protect public health and improve water quality.

IMPLEMENTATION

Recognizing the opportunity and need for BABA implementation guidance, the Made in America Office (MIAO) of the Office of Management and Budget (OMB) published [Initial Implementation Guidance on Application of Buy America Preference in Federal Financial Assistance Programs for Infrastructure](#) (OMB Guidance M-22-11) on April 18, 2022. The guidance provides government-wide implementation direction for all Federal financial assistance programs for infrastructure. Despite the extensive guidance developed by MIAO, EPA's Office of Water infrastructure investment programs have received many questions that were not addressed in OMB Guidance M-22-11 or that require further clarification for EPA water infrastructure programs. The following questions and answers serve to supplement OMB Guidance M-22-11 with implementation procedures specific to EPA's relevant water infrastructure programs.

Section 70914(a) of the IJA states when a Buy America preference under BABA applies: "Not later than... [May 14, 2022], the head of each Federal agency shall ensure that none of the funds made available for a Federal financial assistance program for infrastructure... may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States." Therefore, Federal financial infrastructure investments obligated on or after May 14, 2022, must comply with the BABA requirements. Absent a waiver, all iron, steel, manufactured products, and construction materials permanently incorporated into an infrastructure project subject to the BABA requirements must be produced in the United States. For many of EPA's Office of Water infrastructure investment programs, the vast majority of products permanently incorporated into construction, maintenance, or repair projects must comply with the BABA requirements, with the exception of select construction materials (cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives), which are specifically excepted by the BABA statute.

EPA's Office of Water implements many infrastructure investment programs subject to BABA requirements, including the following:

- Alaska Native Villages and Rural Communities Water Grant Program (ANV) (and any associated Interagency Agreements with the Indian Health Service)
- Clean Water and Drinking Water State Revolving Fund Programs (CW and DWSRF)
- Clean Water and Drinking Water Grants to U.S. Territories and the District of Columbia
- Clean Water Indian and Drinking Water Tribal Infrastructure Grant Set-aside (and any associated Interagency Agreements with the Indian Health Service)
- Coastal Wetlands Planning, Protection and Restoration Act, (CWPPRA) Programs
- Congressionally Directed Spending/Community Project Funding (also known as Community Grants)
- Geographic Programs¹
- Gulf Hypoxia Program
- National Estuaries Program (CWA Section 320)

¹ Geographic Programs include: Great Lakes Restoration Initiative, Chesapeake Bay, San Francisco Bay, Puget Sound, Long Island Sound, Gulf of Mexico, South Florida, Lake Champlain, Lake Pontchartrain, Southern New England Estuaries, Columbia River Basin, Pacific Northwest

- 319 Nonpoint Source Management Program Implementation
- Reducing Lead in Drinking Water Grant Program (SDWA §1459B)
- Assistance for Small and Disadvantaged Communities Grants: Small, Underserved, and Disadvantaged Community Grant Program (SUDC), Emerging Contaminants in Small or Disadvantaged Communities (EC-SDC) and Drinking Water Infrastructure Resilience & Sustainability (SDWA §1459A)
- Sewer Overflow and Stormwater Reuse Municipal Grants (OSG)
- USMCA Implementing Legislation (Section 821 and Title IX, USMCA Supplemental Appropriations, 2020)
- U.S.-Mexico Border Water Infrastructure Program
- Voluntary School and Child Care Program Lead Testing and Remediation Grant Program (SDWA 1464(d))
- Water Infrastructure Finance and Innovation Act (WIFIA)

The questions and answers in this document apply to the implementation of BABA requirements for the Office of Water infrastructure programs listed above unless superseded by regulation, statute, or other applicable guidance. For many of the programs listed above which did not have domestic preference requirements prior to BABA, additional implementation details are pending or may be developed after the issuance of these procedures. In addition, EPA notes that more direction will be helpful to inform the determination and definition of domestic content in manufactured goods. Supplemental guidance on these and other issues, from either OMB or EPA, may be forthcoming. These implementation procedures may also apply to additional, unlisted EPA programs which may be required to apply BABA subsequent to publication of this memorandum (e.g., future funding programs which have been authorized, but not yet appropriated).

For more information on the BABA requirements, visit the EPA Office of Water’s dedicated website – <https://www.epa.gov/cwsrf/build-america-buy-america-baba> – or contact your funding authority (such as your grants officer, portfolio manager, or state contact). For information on approved waivers, visit <https://www.epa.gov/cwsrf/build-america-buy-america-baba-approved-waivers>. You may also email questions to BABA-OW@epa.gov.

This Implementation Procedures document is organized to provide responses to questions in the following topic areas:

• Section 1: General	4
• Section 2: Product Coverage	5
• Section 3: Co-funding	9
• Section 4: Waivers.....	10
• Section 5: Documenting Compliance	12
• Section 6: Programs with American Iron and Steel Requirements.....	16
• Section 7: Program-Specific Issues.....	17
• Appendix 1: Example Build America, Buy America (BABA) Act Construction Contract Language	22
• Appendix 2: Example Build America, Buy America (BABA) Act Assistance Agreement Language	23

QUESTIONS AND ANSWERS

SECTION 1: GENERAL

- Q1.1: Will EPA provide documentation for BABA for bid solicitations and suggested contract language? Will EPA provide suggested language for Assistance Agreements?
 - A1.1: See Appendix 1, which includes suggested language for construction contracts which addresses the BABA requirements. In addition to the language suggested in Appendix 1, EPA also recommends that assistance recipients prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: “By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the certifications are sufficient to demonstrate compliance with Build America, Buy America Act requirements.” In most cases, the assistance recipient’s representatives assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

All Federal Financial infrastructure assistance agreements subject to BABA must have a clause requiring compliance with the requirements. See Appendix 2 for example assistance agreement language.

- Q1.2: Would federally-financed infrastructure projects outside of the United States need to comply with the BABA requirements?
 - A1.2: No. According to the OMB Guidance (M-22-11), a “project” is defined as “...any activity related to the construction, alteration, maintenance, or repair of infrastructure in the United States.” Therefore, the BABA requirements are not implicated for infrastructure projects occurring outside of the United States, such as projects funded through the United States-Mexico-Canada Agreement with infrastructure activities occurring in Mexico or Canada (that is, outside the United States).
 -
- Q1.3: If most of the project is BABA compliant, and a small portion is not, can an assistance recipient self-fund (i.e., paying with non-federal dollars) the non-compliant products?
 - A1.3: Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. All iron, steel, manufactured products, and construction materials used in a project must meet the BABA requirements unless waived. Absent a waiver, there is no “small portion” or product that does not need to satisfy the BABA requirements unless the requirements are waived (or specifically excluded as is the case for cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products). An assistance recipient may request a waiver or inquire as to whether a broad waiver, such as a *de minimis* waiver, might apply.

- Q1.4: How do international trade agreements affect the implementation of the BABA requirements?
 - A1.4: The BABA requirements apply in a manner consistent with United States obligations under international trade agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to these trade agreements. In general, assistance recipients are not signatories to such agreements, so these trade agreements have no impact on BABA implementation. In the few instances where such an agreement applies to a municipality, that municipality is responsible for determining its applicability and requirements and communicating with the funding authority (such as EPA and/or a state) on the actions taken to comply with BABA.

SECTION 2: PRODUCT COVERAGE

- Q2.1: For products made of iron and steel, what is the difference between predominantly and primarily iron and steel?
 - A2.1: EPA considers the terms “predominantly” and “primarily” to be interchangeable, such that a product is considered predominantly (or primarily) iron and steel if it contains greater than 50 percent iron and steel by material cost.
- Q2.2: What is the definition of construction materials (with examples)?
 - A2.2: From OMB Guidance M-22-11: “construction materials” include an article, material, or supply (other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; aggregate binding agents or additives; or non-permanent products) that is or consists primarily of:
 - non-ferrous metals,
 - plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables), (including optic glass),
 - lumber, and
 - drywall.

For example, a plate of glass would be a construction material under BABA, but a framed window that incorporates the glass into a frame would be a manufactured product. Another common construction material for water infrastructure projects would be polyvinyl chloride (PVC) pipe and fittings. However, if PVC components are incorporated into a more complex product such as instrumentation and control equipment or a water treatment unit, those items would be manufactured products.

- Q2.3: What are manufactured products (with examples)?
 - A2.3: From OMB Guidance M-22-11: “...all manufactured products used in the project are produced in the United States—this means the manufactured product was manufactured in the United States; and the cost of the components of the manufactured product that are mined, produced, or manufactured in the United States is greater than 55 percent of

the total cost of all components of the manufactured product, unless another standard for determining the minimum amount of domestic content of the manufactured product has been established under applicable law or regulation...”

The manufactured products category would cover the majority of potential water infrastructure products, including complex products made up of a variety of material types and components. For water infrastructure projects, common manufactured products would include, but not be limited to, pumps, motors, blowers, aerators, generators, instrumentation and control systems, gauges, meters, measurement equipment, treatment equipment, dewatering equipment, actuators, and many other mechanical and electrical items.

- Q2.4: Which category will valves fall under for BABA? Will it differ from the American Iron and Steel (AIS) requirements?
 - A2.4: For programs that are subject to BABA and AIS (SRF, WIFIA, and Community Project Funding), projects using valves should classify them as iron and steel products under BABA as long as their material cost is made up of more than 50 percent iron and/or steel. Valves with 50 percent or less iron and/or steel by material cost would be considered manufactured products under the BABA requirements.

In accordance with OMB Guidance M-22-11, an article, material, or supply should be classified into only one of the three categories: iron and steel, manufactured products, or construction materials. Under the AIS requirements, all valves made primarily of iron and steel (that is, those with iron and/or steel material cost greater than 50 percent) must comply with the AIS requirements. For BABA, EPA interprets Section IV of OMB Guidance M-22-11 to mean that iron and steel products are those items that are primarily iron and steel, the same as for the AIS requirements.

- Q2.5: Does EPA have a list of products to be classified as “Iron and Steel” under BABA?
 - A2.5: Although this list is not comprehensive, the following products were classified as AIS products if made primarily (more than 50 percent) of iron and/or steel by materials cost (for programs subject to both AIS and BABA, this list would be equivalent for “iron and steel” items or products under either requirement):

Products likely made “primarily” of iron and steel to be classified as <u>Iron and Steel</u> under BABA		
Lined and Unlined Pipe	Lined and Unlined Fittings	Tanks
Flanges	Pipe Clamps and Restraints	Structural Steel
Valves	Hydrants	Pre-Cast, Iron/Steel Reinforced Concrete (of all types, regardless of iron/steel content percentage)
Manhole Covers and other Municipal Castings	Access Hatches	Ballast Screens
Iron or Steel Benches	Bollards	Cast Bases
Cast Iron Hinged Hatches	Cast Iron Riser Rings	Catch Basin Inlets

Cleanout/Monument Boxes	Construction Covers and Frames	Curb and Corner Guards
-------------------------	--------------------------------	------------------------

Products likely made “primarily” of iron and steel to be classified as <u>Iron and Steel</u> under BABA		
Curb Boxes	Curb Openings	Curb Stops
Detectable Warning Plates	Downspout Shoes	Drainage Grates
Drainage Grate Frames and Curb Inlets	Inlets	Junction Boxes
Lampposts	Manhole Rings and Frames	Manhole Risers
Meter Boxes	Service Boxes	Steel Hinged Hatches
Steel Riser Rings	Trash Receptacles	Tree Grates
Tree Guards	Trench Grates	Valve Boxes
Valve Box Covers and Risers	Access Ramps	Aeration Pipes and Fittings (separate from aeration/blowers)
Angles	Backflow Preventers/Double Check Valves	Baffle Curtains
Iron or Steel Bar	Bathroom Stalls	Beam Clamps
Cable Hanging Systems	Clarifier Tanks	Coiled Steel
Column Piping	Concrete Reinforcing Bar, Wire, and Fibers	Condensate Sediment Traps
Corrugated Pipe	Couplings	Decking
Digester Covers	Dome Structures	Door Hardware
Doors	Ductwork	Expansion Joints
Expansion Tanks (diaphragm, surge, and hydropneumatics)	Fasteners	Fencing and Fence Tubing
Fire Escapes	Flanged Pipe	Flap Gates
Framing	Gate Valves	Generic Hanging Brackets
Grating	Ground Testing Boxes	Ground Test Wells
Guardrails	HVAC Registers, Diffusers, and Grilles	Joists
Knife Gates	Ladders	Lifting Hooks, J-bar, Connectors within, and Anchors for Concrete
Lockers	Man Baskets and Material Platforms	Manhole Steps
Mud Valves	Municipal Casting Junctions	Non-mechanical (aka stationary) Louvers and Dampers
Overhead Rolling Doors/ Uplifting Doors (manual open, no motor)	Pipe Connectors	Pipe Hangers
Pipe Piling (any type of steel piling)	Pipe Spool (pipe, flanges, connectors, etc.)	Pipe Supports
Pitless Adaptors	Pre-fab Steel Buildings/Sheds (simple structure, unfurnished)	Pre-stressed Concrete Cylinder Pipe (PCCP)
Railings	Reduced Pressure Zone (RPZ) Valves	Roofing
Service Saddles	Sheet Piling	Sinks (not part of eyewash systems)
Solenoid Valves	Stairs	Static Mixers
Stationary Screens	Surface Drains	Tapping Sleeves
Telescoping Valves	Tipping Buckets	Trusses
Tubing	Valve Stem Extensions	Valve Stems (excluding handwheels and actuators)

Wall Panels	Wall Sleeves/Floor Sleeves	Welding Rods
Well Casing	Well Screens	Wire
Wire Cloth	Wire Rod	Wire Rope and Cables

Q2.6: Does EPA have a list of products that could be made “primarily” of iron and steel but would be classified as “manufactured products” under BABA?

A2.6: Although this list is not comprehensive, the following products would be considered “manufactured products” under the BABA requirements, even if the item might be composed primarily of iron and steel by materials cost (Note: These items are not subject to the AIS requirements.):

Products likely made “primarily” of iron and steel to be classified as <u>Manufactured Products</u> under BABA		
Actuator Superstructures/ Support Structures	Aeration Nozzles and Injectors	Aerators
Analytical Instrumentation	Analyzers (e.g., ozone, oxygen)	Automated Water Fill Stations
Blowers/Aeration Equipment	Boilers, Boiler Systems	Chemical Feed Systems (e.g., polymer, coagulant, treatment chemicals)
Chemical Injection Quills	Chemical Injectors	Clarifier Mechanisms/Arms
Compressors	Controls and Switches	Conveyors
Cranes	Desiccant Air Dryer Tanks	Dewatering Equipment
Dewatering Roll-offs	Disinfection Systems	Drives (e.g., variable frequency drives)
Electric/Pneumatic/Manual Accessories Used to Operate Valves (such as electric valve actuators)	Electrical Cabinetry and Housings (such as electrical boxes/enclosures)	Electrical Conduit
Electrical Junction Boxes	Electronic Door Locks	Elevator Systems (hydraulic, etc.,)
Emergency Life Systems (including eyewash stations, emergency safety showers, fire extinguishers, fire suppression systems including sprinklers /piping/valves, first aid, etc.)	Exhaust Fans	Fall Protection Anchor Points
Fiberglass Tank w/Appurtenances	Filters (and appurtenances, including underdrains, backwash systems)	Flocculators
Fluidized Bed Incinerators	Galvanized Anodes/Cathodic Protection	Gear Reducers
Generators	Geothermal Systems	Grinders
Heat Exchangers	HVAC (excluding ductwork)	HVAC Dampers (if appurtenances to aerators/blowers)
HVAC Louvers (mechanical)	Intake and Exhaust Grates (if appurtenances to aerators/blowers)	Instrumentation
Laboratory Equipment	Ladder Fall Prevention Systems	Ladder Safety Posts
Lighting Fixtures	Lightning and Grounding Rods	Mechanical or Actuated Louvers/Dampers
Membrane Bioreactor Systems	Membrane Filtration Systems	Metal Office Furniture (fixed)

Meters (including flow, wholesale, water, and service connection)	Motorized Doors (unit)	Motorized Mixers
Motorized Screens (such as traveling screens)	Motors	Pelton Wheels
Pipeline Flash Reactors (similar to injectors)	Plate Settlers	Precast Concrete without Iron/Steel Reinforcement

Products likely made “primarily” of iron and steel to be classified as <u>Manufactured Products</u> under BABA		
Furnished Pre-fab Buildings (such as furnished with pumps, mechanics inside)	Presses (including belt presses)	Pressure Gauges
Pump Cans/Barrels and Strainers	Pumps	Mechanical Rakes
Safety Climb Cable	Sampling Stations (unless also act as hydrant)	Scrubbers
Sensors	Sequencing Batch Reactors (SBR)	Steel Shelving (fixed)
Slide and Sluice Gates	Spray Header Units	Steel Cabinets (fixed interior/furniture)
Supervisory Control and Data Acquisition (SCADA) Systems	Tracer Wire	Valve Manual Gears, Actuators, Handles
Voltage Transformer	Water Electrostatic Precipitators (WESP)	Water Heaters
Weir Gates		

- Q2.7: Is asphalt paving a covered product under BABA?
 - A2.7: No. EPA interprets Section 70917(c) of the IIJA to exclude asphalt from BABA requirements. Asphalt paving is a type of concrete composed of an aggregate material mixed with a binder (bitumen). EPA considers asphalt concrete to be excluded by section 70917(c) due to its similarities with cement and cementitious materials.

SECTION 3: CO-FUNDING

- Q3.1: If projects are co-funded with funding mechanisms that don’t require BABA, must the entire project comply with BABA?
 - A3.1: Yes. Any project that is funded in whole or in part with federal assistance must comply with the BABA requirements, unless the requirements are otherwise waived. A “project” consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all the contracts and assistance agreements awarded are closely related in purpose, time, and place. This precludes the intentional splitting of projects into separate and smaller contracts or assistance agreements to avoid BABA’s applicability on some portions of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which case, separate contracts or assistance agreements would carry separate requirements.

- Q3.2: How will project requirements be determined for co-funded projects subject to potentially different general applicability/programmatic waiver conditions (such as different adjustment period waivers)?
 - A3.2: OMB Guidance M-22-11 addresses cases with project co-funding from separate programs. EPA would apply the guidance’s “cognizant” program determination to projects that are co-funded with different general applicability/programmatic waivers. For instance, if a project were co-funded between WIFIA and SRF and the majority of the Federal funding for the project is from WIFIA, then WIFIA would be the “cognizant” program for application and determination of waivers. In that case, any conditions from an applicable WIFIA waiver would apply.

SECTION 4: WAIVERS

- Q4.1: Who may apply for a waiver and how do you apply?
 - A4.1: Assistance recipients and their authorized representatives may apply for a project-specific waiver. EPA does not accept waiver requests from suppliers, distributors, or manufacturers unless the assistance recipient endorses and submits the request on its own behalf to the funding authority. In the case where multiple programs are providing federal funds to the project, the assistance recipient should submit the waiver request to the cognizant program, the one providing the greatest amount of federal funds for the project. For information on applying for cost waivers, see questions 4.4 and 4.5. For information on the SRF program roles and responsibilities, see question 7.6.

Project-specific waiver requests should generally include: (1) a brief summary of the project, (2) a description and explanation of the need for the waiver for the product(s) in question, (3) a brief summary of the due diligence conducted in search of domestic alternatives (which could include correspondence between assistance recipient and supplier/distributors), (4) the quantity and materials of the product(s) in question, (5) all engineering specifications and project design considerations relevant to the product(s) in question, (6) the approximate unit cost of items (both foreign and domestic) in addition to an estimated cost of the materials and overall project, (7) the date any products will be needed on site in order to avoid significant project schedule disruptions, and (8) any other pertinent information relevant to EPA’s consideration of the waiver (e.g., if relevant for SRF projects: whether the project is designated as an equivalency project, the date the plans and specifications were submitted to the state, the date of construction initiation, expected date of project completion, any special considerations such as local zoning and building ordinances, seismic requirements, or noise or odor control requirements).

In the case of indirect federal assistance, such as the SRF programs, the state authority reviews and conveys the waiver request to EPA. States should submit waiver requests to the appropriate program waiver request inbox. For SRF projects, please use CWSRFWaiver@epa.gov or DWSRFWaiver@epa.gov.

- Q4.2: Can an assistance recipient request a waiver based on a specification written for a specific brand or model of product (that is, a specification that names a branded item or model)?
 - A4.2: In most cases, performance-based specifications are expected and required for the majority of infrastructure projects funded by EPA’s financial assistance programs. In rare cases where “branded” or product-specific sourcing may be included in project specifications, it is suggested that the specifications include the item in question (that is, not simply a catalog page, but also materials of construction, sizing, quantities, and applicable engineering performance design characteristics for the project, etc.) in addition to the standard phrase “or equal.” For the purposes of product alternative market research, EPA will evaluate the BABA requirements based on performance-based engineering specifications for the product(s) in question. If the project’s specifications do not include performance-based specifications, or at least an “or equal” designation, EPA will base its research on an “or equal” designation using best professional judgment to the extent practicable.

- Q4.3: If a manufactured product is not readily available domestically, will EPA provide short-term “limited availability” product waivers?
 - A4.3: EPA will address the unavailability of domestic products through the waiver process, including potential national short-term waivers for specific products, if appropriate. To the extent practicable and with the intent to maximize domestic market and supply chain development, EPA intends to address issues of broad product unavailability with targeted, time-limited, and conditional waivers, as prescribed in OMB Guidance M-22-11. EPA will follow its robust and thorough product research processes (those put into place for the AIS requirements for the SRF and WIFIA programs and expanded for the new BABA requirements) to identify and determine those products for which proposed national/general applicability waivers may be appropriate.

- Q4.4: What information is needed when applying for a cost waiver under BABA?
 - A4.4: As part of the cost waiver request, the assistance recipient must demonstrate that implementation of the BABA requirements will increase the overall project cost more than 25 percent. Depending on the circumstances of the overall project cost increases, documentation to justify the cost waiver can vary but may include itemized cost estimates or bid tabulations comparing project costs with and without BABA implementation. Assistance recipients should begin assessing the potential cost impacts of the BABA requirements during the design phase of a project.

- Q4.5: Can administrative costs associated with tracking and verification of certifications be considered when determining if the cost of a project increases by 25 percent or more?
 - A4.5: Yes. Section 70914(b)(3) of the IIJA states that a waiver may be provided if the overall

cost of the project increases by more than 25 percent due to the “inclusion of iron, steel, manufactured products, or construction materials produced in the United States.” EPA interprets this to mean that the “inclusion” of the BABA-covered products could encompass reasonable administrative costs associated with complying with the BABA requirements, such as staff, contractor, and technological resources to collect and track BABA compliance documentation.

- Q4.6: How can assistance recipients and construction contractors address product delivery delays?
 - A4.6: Assistance recipients should reasonably plan for material procurement to account for known potential supply chain issues or extended lead times and shall notify the funding authority well in advance of the issues so that prompt attention can be given to explore options. Where extended lead times for compliant products are impacting project schedules and may significantly impact construction progress, timely communication with the funding agency is important. For products that are unavailable within a reasonable timeframe to meet the objectives and schedule of a project, EPA may consider a non-availability waiver with adequate justification. An assistance recipient would need to apply for the waiver and contact its funding authority (such as EPA and/or a state) to initiate the waiver process.

SECTION 5: DOCUMENTING COMPLIANCE

- Q5.1: Who will be responsible for BABA enforcement?
 - A5.1: Responsibility for BABA implementation applies at all levels, from manufacturers to suppliers and distributors, construction contractors, assistance recipients, and funding authorities.

The manufacturers have responsibility to provide adequate and accurate documentation of the products manufactured. If suppliers and distributors are involved, they are responsible for passing along compliance documentation for products supplied to projects that are subject to the BABA requirements.

The assistance recipient and their representatives are primarily responsible for ensuring the documentation collected for products used on the project is sufficient to document compliance with the BABA requirements.

The funding authority is responsible for providing oversight and guidance as needed to ensure the proper implementation of the requirements. The Uniform Grants Guidance (UGG) (Title 2 of the Code of Federal Regulations (CFR) Part 200) applies to many Federal financial assistance agreements that will include BABA requirements. The general provisions of 2 CFR Part 200 determine the responsible party for the grant funding authority.

For information on SRF program roles and responsibilities, see question 7.6. At all levels, where fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888- 546-8740

or OIG_Hotline@epa.gov. More information can be found at this website:
<http://www.epa.gov/oig/hotline.htm>.

- Q5.2: When will the BABA requirements be assessed for compliance? Do assistance recipients need to have waivers for potential non-domestic products before assistance agreements are in place, at the time products are procured or products are incorporated into the project (i.e., used)?
 - A5.2: Compliance is assessed where the domestic product is used (or installed) at the project site. Proper compliance documentation, whether it is a BABA certification letter or a waiver, should accompany a product prior to its “use”, in accordance with Section 70914(a) of IIJA. This may occur prior to assistance agreements being in place but is not necessary. Additionally, communication of BABA requirements through appropriate Terms and Conditions in financial assistance agreements and in project solicitation and contract documents is key in ensuring all parties involved are informed of the requirements for the project before construction is underway.

- Q5.3: How can product compliance with the BABA requirements be demonstrated?
 - A5.3: Assistance recipients and their representatives should ensure that the products delivered to the construction site are accompanied by proper documentation that demonstrate compliance with the law and be made available to the funding authority upon request. The documentation may be received and maintained in hard copy, electronically, or could be embedded in construction management software. The use of a signed certification letter for the project is the most direct and effective form of compliance documentation for ensuring products used on site are BABA-compliant prior to their installation; however, other forms of documentation are also acceptable as long as collectively, the following can be demonstrated:
 - (1) Documentation linked to the project. For example, this can be in the form of the project name, project location, contract number, or project number.
 - (2) Documentation linked to the product used on the project. For example, description of product(s) (simple explanation sufficient to identify the product(s)), or an attached (or electronic link to) purchase order, invoice, or bill of lading.
 - (3) Documentation includes statement attesting that the products supplied to the assistance recipient are compliant with BABA requirement. Reference to the Infrastructure Investment and Jobs Act (“IIJA”) or the Bipartisan Infrastructure Law (BIL) are also acceptable. For iron and steel items under BABA, references to the American Iron and Steel (AIS) requirements are also acceptable and reciprocal with BABA for such items.
 - (4) Documentation that manufacturing occurred in the United States, which could include, for example, the location(s) of manufacturing for each manufacturing step that is being certified. It is acceptable for manufactured products to note a single point of manufacturing, documenting that the final point of manufacturing is in the United States. Note that each BABA category may require different determinations for

compliance.

- (5) Signature of company representative (on company letterhead and signature can be electronic). The signatory of the certifying statement affirms their knowledge of the manufacturing processes for the referenced product(s) and attests that the product meets the BABA requirements.

In addition to compliance documentation, assistance recipients or their representatives should also conduct a visual inspection of the product when it arrives to the project site, especially for iron and steel products which are often stamped with the country of origin. (Note: A country of origin stamp alone is not sufficient verification of compliance with BABA and assistance receipts should not rely on it to ensure compliance.)

EPA may develop alternative procedures for demonstrating compliance. Additional project- or program-specific instructions may be developed on a case-by-case basis in order to meet individual circumstances.

- Q5.4: Will EPA provide a form or template for tracking and documenting compliance?
- A5.4: EPA does not require a specified format for tracking or documenting compliance. Assistance recipients are free to develop any system (from simple to complex software) for tracking items used on the project and the accompanying compliance documentation, e.g., certification letters, applicable waivers, if it helps with implementation and compliance. Elements that may help with keeping track of compliance may include: product description, quantity required/used, product category (i.e., iron and steel, manufactured product, or construction material), status of obtaining certification letter, product cost, and whether the item might qualify as *de minimis*, or qualify under another applicable waiver.
- Q5.5: If a manufacturer claims to comply with the Buy American Act, does it also comply with BABA?
 - A5.5: No. With the exception of the AIS requirements – which EPA interprets to be equivalent to the “iron and steel” requirements under BABA – EPA does not have an interpretation about the comparability of other domestic preference requirements relative to BABA. Any products that are to be certified as compliant with BABA should include a specific reference to the BABA requirements and appropriate attestation from a responsible manufacturing company official. See Question 5.3 for EPA’s recommendations for BABA certification letters.
- Q5.6: How will assistance recipients manage certification letters for hundreds, possibly thousands of products?

A5.6: EPA recognizes that the new BABA requirements will cover most products used in typical water and wastewater infrastructure projects, and that the number of items which may require certification at large and/or complex projects may reach several hundred. EPA is concerned about the potential administrative burden that this would place on assistance recipients. EPA recommends that projects with a high number of potentially covered

products meet with their funding authority about potential compliance strategies to minimize burden and streamline compliance activity. Assistance recipients should prepare contract bid solicitation documents with a statement for the consulting engineers and construction firms as follows: “By signing payment application and recommending payment, Contractor certifies they have reviewed documentation for all products and materials submitted for payment, and the documentation is sufficient to demonstrate compliance with Build America, Buy America Act requirements.” In most cases, the assistance recipient’s representatives may assume the responsibility for their clients to conduct due diligence on compliance with applicable domestic preference requirements.

- Q5.7: Who is responsible for documenting the 55 percent content requirement for manufactured products under BABA? What if the final manufacturer cannot trace or verify domestic origin for all components?
 - A5.7: The manufacturer who signs a certification letter is responsible for documenting compliance with any of the three categories of products (iron and steel, manufactured products, or construction materials). For manufactured products, BABA requires that greater than 55 percent of the total cost of all components of the manufactured product be from domestic sources. EPA recommends that the certification letter for manufactured products document whether the item passes the content test in the final product along with a statement attesting to compliance with the BABA requirements for manufactured products.
- Q5.8: How do final product fabricators document compliance when the final step of manufacturing may be simply assembling components?
 - A5.8: It is acceptable, in many cases, especially for highly complex manufactured products that utilize many sub-components, for the final point of assembly to certify without using a “step certification” process. Multiple certifications (i.e., step certifications) or a singular certification can be used for a product, as long as the certifying official is willing to attest to the product’s compliance with BABA requirements at all stages of manufacturing.
- Q5.9: Will Material Test Reports be acceptable in lieu of a BABA certification for iron and steel?
 - A5.9: Material Test Reports (MTRs, commonly referred to as “Mill Certifications” or “Mill Certs”) provide the chemical composition of steel and iron from a mill or foundry. If an MTR accompanies the delivery of steel or iron to a project site with an invoice or bill of lading, EPA will consider it sufficient to demonstrate compliance (equivalent to a certification letter) as long as the MTR includes a manufacturer representative’s signature in addition to the location (city and state) of the mill/foundry. It is common for MTRs to be the first letter in a “step certification” if the product is further fabricated or painted, etc., by another manufacturer.
- Q5.10: Can a manufacturer use a fillable certification letter for products?

- A5.10: EPA recommends that certifications be signed by representatives of the manufacturing entity. EPA does not oppose manufacturers using forms to internally develop letters within their company, thereby providing signed, non-manipulable certification letters to suppliers, distributors, and/or assistance recipients. A fillable form that can be changed by someone outside of the manufacturer after signature does not demonstrate compliance and may create compliance concerns for the manufacturer or assistance recipient.
- Q5.11: Are product certifications from suppliers and distributors allowed?
 - A5.11: EPA recommends that representatives of product manufacturers certify compliance and discourages suppliers and distributors from creating certification letters. EPA does not rule out the possibility that a third-party certification process, such as a certification by a distributor, may be viable. However, EPA is currently not aware of a system or proposed system that meets the EPA’s recommendations for documentation of product certification.
- Q5.12: How long should assistance recipients keep compliance documentation?
 - A5.12: Assistance recipients should apply recordkeeping requirements for the project according to the procedures dictated by the funding authority. For most EPA grant programs, this is prescribed in the UGG at 2 CFR 200.334-200.338; e.g., the SRF programs require a minimum of three years. Other funding programs may require longer documentation retention periods.

SECTION 6: PROGRAMS WITH AMERICAN IRON AND STEEL REQUIREMENTS

- Q6.1: Does BABA supersede the American Iron and Steel (AIS) Requirements?
 - A6.1: The BABA requirements for items considered “iron and steel” are equivalent to those for covered iron and steel products under the AIS requirements in the Clean Water Act and the Safe Drinking Water Act. These requirements apply to the CWSRF, DWSRF, WIFIA, and Water infrastructure Community Grants. BABA includes a “Savings Provision” (Section 70917(b)) that states that BABA does not affect existing domestic content procurement preferences for infrastructure projects funded by Federal financial assistance programs that meet the requirements of section 70914. EPA views the AIS requirements as meeting the “iron and steel” product requirements of BABA Section 70914, as they both include the key requirement that items made of iron and steel be wholly manufactured in the United States from the point of melting and/or pouring the iron or steel components through final manufacturing step. Because of the “Savings Provision” of Section 70917, the AIS requirements satisfy the “iron and steel” requirements of BABA. For the programs that have AIS requirements, EPA intends to implement BABA requirements the same way for iron and steel items as it has done for AIS products.

- Q6.2: For iron and steel products, does a manufacturer need to demonstrate compliance from initial melting through the finished product?
 - A6.2: For iron and steel products, the BABA requirements are the same as the existing AIS requirements, in that all of the iron and steel in a covered product (that is, the product is comprised of more than 50 percent iron and steel by material cost) must be melted and poured in the United States and all subsequent manufacturing processes (such as grinding, rolling, bending, reheating, and casting) must occur in the United States.

Q6.3: Will EPA apply the same manufacturing standards for BABA iron and steel products as for the American Iron and Steel (AIS) requirements?

- A6.3: Yes. For AIS, EPA did not require raw materials used in the production of steel or iron to be domestically sourced. For BABA, EPA interprets the requirements to be the same. Hence, like AIS, raw materials in the production of iron and steel subject to BABA requirements would not need to be domestically sourced. The key step for both AIS and BABA domestic iron and/or steel production is the melting/pouring (that is, the location of the furnace), which must be in the United States.
- Q6.4: Will the certification process be similar to the process established for the American Iron and Steel requirements?
 - A6.4: EPA expects the certification process for the BABA requirements to be very similar to that established for the AIS requirements. For iron and steel products, the process should remain the same for AIS and BABA. EPA recommends for manufactured products and for construction materials that certification letters include direct reference to the product/material content requirements under BABA, in addition to an affirmative statement verifying that the product meets the BABA requirements.
- Q6.5: Will duplicate certification letters be required for AIS and BABA for iron/steel products?
 - A6.5: No. Compliance with BABA requirements will be sufficient to demonstrate compliance with AIS requirements for iron and steel products. If a project is subject to BABA, the only demonstration of compliance necessary is with the BABA requirements, of which the iron and steel requirements are equivalent to those of the AIS statutory requirements: the iron or steel in a product made primarily or predominantly of iron and steel (comprising more than 50 percent iron and steel by material cost) must be melted and/or poured in the United States and all subsequent manufacturing processes must occur in the United States.

SECTION 7: PROGRAM-SPECIFIC ISSUES

- Q7.1.: How do the BABA requirements apply to Community Grants?
 - A7.1: The Community Project Funding/Congressionally Directed Spending grants for the construction of drinking water, wastewater, and stormwater infrastructure and for water

quality protection are subject to the requirements specified in the explanatory statement accompanying the Consolidated Appropriations Act (Explanatory Statement for Division G of P.L. 117-13, the Consolidated Appropriations Act of 2022). The explanatory statement asserts: “Applicable Federal requirements that would apply to a Clean Water State Revolving Fund or Drinking Water State Revolving Fund project grant recipient shall apply to a grantee receiving a CPF grant under this section.” Therefore, the federally funded Community Project Funding/Congressionally Directed Spending grants are subject to the same requirements that apply to CWSRF or DWSRF projects, including BABA and AIS requirements. See also A1.2.

- Q7.2: Should SRF projects covered by the BABA SRF Projects Design Planning Adjustment Period Waiver follow the same procedures for demonstrating compliance as outlined for American Iron and Steel requirements?
 - A7.2: Yes. The SRF Design Planning Adjustment Period waiver does not waive the iron and steel requirements under BABA. The SRF programs have existing domestic preference requirements for SRF projects under CWA Section 608 and SDWA Section 1452(a)(4) (AIS requirements) to use iron and steel products that are produced in the United States. Sections 70917(a) and (b) of BIL explain the application of BABA to existing domestic preference requirements. Specifically, the savings provision in Section 70917(b) states that existing domestic preference requirements that meet BABA requirements are not affected by BABA. The statutory AIS requirements were existing at the time BABA became law and satisfy the BABA iron and steel requirements. Therefore, the statutory AIS requirements that have previously applied to SRF-funded projects will continue to do so, and compliance with AIS requirements will satisfy the BABA iron and steel requirements. Demonstration of compliance for iron and steel products will follow the AIS implementation policies for projects subject to the waiver.
- Q7.3: For SRF programs, is BABA considered a federal cross-cutting authority? (i.e., do “equivalency” rules apply?)
 - A7.3: Yes, BABA is considered a federal cross-cutting requirement that applies to SRF assistance equivalent to the federal capitalization grant (i.e., “equivalency” projects). EPA’s SRF regulations at 40 CFR 35.3145 and 35.3575 require states and recipients of SRF funds equivalent to the amount of the federal capitalization grant to comply with federal cross-cutting requirements. Section 70914 of the IIJA, which states when a Buy America preference applies, explains that “none of the funds made available for a Federal financial assistance program for infrastructure...may be obligated for a project unless all of the iron, steel, manufactured products, and construction materials used in the project are produced in the United States.” Therefore, BABA only applies to projects funded in an amount equivalent to the federal capitalization grant and not to those projects receiving funds in excess of the capitalization grant (i.e., “non-equivalency” projects). (Note: The AIS requirements continue to apply for all SRF projects, including non-equivalency projects, and all WIFIA and Community Grant projects, because equivalency does not apply.)

- Q7.4: Do the BABA requirements apply to Drinking Water State Revolving Fund set-asides?
 - A7.4: Due to requirements related to the deposit of funds in the DWSRF program, almost all of the funds used to conduct set-aside activities are Federal dollars. Therefore, Federal cross-cutting requirements must be applied to all set-aside activities. However, in the case of most set-aside activities, the cross-cutting requirements will not be implicated because of the nature of the activities conducted under the set-asides. Because the BABA requirements only apply to infrastructure, and infrastructure typically is not an eligible set-aside expenditure (with one potential exception being loans for incentive-based source water protection measures under the Local Assistance and Other State Programs Set-Aside), the BABA requirements will not apply to most set-aside activities.

- Q7.5: What if an SRF project is refinanced using Federal financial assistance on or after May 14, 2022?
 - A7.5: If an SRF project began construction, financed from another funding source, prior to May 14, 2022, but is refinanced through an assistance agreement executed on or after that date, BABA requirements will apply to all construction that occurs on or after May 14, 2022, through completion of construction, unless a waiver applies. There is no retroactive application of the BABA requirements where a refinancing occurs for an SRF project that has completed construction prior to May 14, 2022. (Note: If SRF funding is used for the refinancing, the AIS requirements may still apply depending on the timing of construction.)

- Q7.6: What are the roles and responsibilities for SRF programs for BABA implementation?
 - A7.6: Implementation of the BABA requirements for the State Revolving Fund programs will continue the roles and responsibilities from the successful AIS implementation process.

As with AIS, it is both the assistance recipient's and the state's responsibility to ensure compliance with the BABA requirements. The state is the recipient of a federal capitalization grant and must comply with all grant conditions, including a condition requiring adherence to BABA requirements.

Consequently, states are strongly advised to conduct site visits of projects during construction and review documentation demonstrating the assistance recipient's proof of compliance. In EPA's experience, most states conduct periodic site visits and arrange timely meetings with funded projects. Observed best practices typically include a meeting early in the process (sometimes before bid and usually prior to commencing construction) and at least one project site visit during the construction process. Assistance recipients must maintain documentation of compliance with the BABA requirements, as explained in question 5.3. The documents must be kept by the assistance recipient and should be reviewed by the state during project reviews.

The state's role in the waiver process is to review any waiver requests submitted to the state to ensure that all necessary information has been provided by the assistance recipient prior to forwarding the request to EPA. If a state finds the request lacking, the state should work with

the assistance recipient to help obtain complete information. Question 4.1 explains the information needed by EPA to expediently review a waiver request.

In order to implement the BABA requirements, EPA has developed an approach for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow states, on behalf of the assistance recipients, to apply for waivers of the BABA requirements directly to EPA Headquarters. Only waiver requests received and/or endorsed from states will be considered. Pursuant to BABA, EPA has the responsibility to make findings as to the issuance of waivers to the BABA requirements.

Step-by-step SRF Waiver Process

The waiver process begins with the assistance recipient. To fulfill the BABA requirements, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American-made iron and steel, manufactured goods, and construction materials. It is essential that the assistance recipient include the BABA terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 2 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three statutory conditions is demonstrated to EPA and approved.

To apply for a project-specific waiver, the assistance recipient should email the request in the form of a Word document (.doc) or editable PDF (.pdf) to the funding program. It is strongly recommended that each state identify a person or persons for BABA communications. The state designee(s) will review the application for the waiver and determine whether the necessary information has been included (Note: More information may be provided in the future regarding what information is required to be included in waiver requests). Once the waiver application is complete, the designee (State) will forward the application to the EPA for review.

Evaluation by EPA

After receiving an application for waiver of the BABA requirements and ensuring sufficient information was provided, EPA will publish the request on its website for 15 days and receive public comment. EPA will then determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the state designee whether a waiver request has been approved or not approved as soon as such a decision has been made. Granting such a waiver is a four-step process:

1. Research – After receiving an application for a waiver, EPA will perform market research to determine whether the iron, steel, manufactured goods, or construction materials are available domestically.
2. Posting – After research, if no domestic product has been identified, EPA is required to

publish the application and all material submitted with the application on EPA's website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: <https://www.epa.gov/cwsrf/build-america-buy-america-baba-waivers-open-public-comment>.

3. Evaluation – After receiving an application for waiver of the BABA requirements, EPA will determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver to determine whether or not to grant the waiver.

4. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program and post the signed waiver on the Agency's website. The assistance recipient should keep a copy of the signed waiver in its project files.

(Note: Additional steps may be required in the future regarding the waiver process depending on additional guidance from OBM) APPENDIX 1



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

December 8, 2022

MEMORANDUM

SUBJECT: Guidelines for Implementing the Bipartisan Infrastructure Law Signage Term and Condition for the State Revolving Fund Programs

FROM: Raffael Stein, Director
Water Infrastructure Division

Raffael Stein

Digitally signed by Raffael
Stein
Date: 2022.12.08
17:45:20 -05'00'

Anita Maria Thompkins, Director
Drinking Water Infrastructure Development Division

ANITA THOMPKINS
Digitally signed by ANITA
THOMPKINS
Date: 2022.12.08
14:41:14 -05'00'

TO: Water Division Directors
Regions I-X

The United States Chief Financial Officers (CFO) Council recently issued a Controller Alert titled, ["Enhancing Transparency Through the Use of the Building a Better America Emblem on Construction Signs."](#) The Controller Alert informs federal agencies of the availability of the *Building a Better America* emblem and provides strategies for emblem use to increase the transparency of projects funded in whole or in part by the Infrastructure Investment and Jobs Act (IIJA), also referred to as the Bipartisan Infrastructure Law (BIL). In response to this Controller Alert, EPA's Office of Grants and Debarment developed a term and condition that EPA must include in all fiscal year FY 2022 – 2026 Clean Water and Drinking Water State Revolving Fund (SRF) BIL capitalization grant awards. Regions must amend already-awarded BIL capitalization grants to include the new term and condition and include it in new BIL capitalization grants going forward.

For applicable projects (see next paragraph), the BIL signage term and condition will substitute for the existing SRF signage term and condition that implements the June 2015 policy, ["Guidelines for Enhancing Public Awareness of SRF Assistance Agreements."](#) In other words, only the BIL-specific signage term and condition will apply to the applicable projects. The existing June 2015 SRF signage term and condition will continue to apply to equivalency projects funded with non-BIL (i.e., base) SRF capitalization grants. Although the 2015 signage requirement does not apply to BIL-funded SRF projects, we recommend that states encourage all borrowers/projects to notify the public of the benefits of the projects and the role of the SRF, using one of the options included in the June 2015 policy memorandum.

The BIL signage term and condition requires a physical sign displaying the official *Building a Better America* emblem and EPA logo be placed at construction sites for BIL-funded projects. For the Clean Water and Drinking Water SRF programs, this requirement applies only to the following projects:

- Construction projects identified as “equivalency projects” for BIL general supplemental capitalization grants;
- Construction projects that receive additional subsidization (grants or forgivable loans) made available by BIL general supplemental capitalization grants;
- All construction projects funded with BIL emerging contaminants capitalization grants;
- All construction projects funded with BIL lead service line replacement capitalization grants.

States must ensure that assistance recipients for which this requirement is applicable are aware of the requirement and the signage specifications. States must include this requirement in applicable assistance agreements. Additional details and specifications are included in the attached term and condition.

The sign must be placed at construction sites in an easily visible location that can be directly linked to the work taking place and must be maintained in good condition throughout the construction period. In cases where the construction site covers a large area (e.g., lead service line replacement or septic tank repair/replacement projects), a sign should be placed in an easily visible location near where the work is being performed (e.g., entrance to the neighborhood, along a main road through town, etc.). Signage costs are considered an allowable SRF expense, provided the costs associated with the signage are reasonable. Additionally, to increase public awareness of projects serving communities where English is not the predominant language, assistance recipients are encouraged to translate the language on signs (excluding the official Building a Better America emblem or EPA logo or seal) into the appropriate non- English language(s). The costs of such translation are allowable SRF expenses, provided the costs are reasonable.

Inquiries may be directed to Josh Amaris at Amaris.Josh@epa.gov and Nick Chamberlain at Nick.Chamberlain@epa.gov.

Attachment

Cc: Region I-X Branch Chiefs
Region I-X SRF Coordinators
Michael Deane
Kiri Anderer

Attachment A: Infrastructure Investment and Jobs Act (IIJA) Signage Required Term and Condition

This Term & Condition applies to construction projects funded in whole or in part by the Infrastructure Investment and Jobs Act (IIJA) for the following programs: Clean Water State Revolving Fund (CWSRF), Drinking Water State Revolving Fund (DWSRF), Brownfields, Superfund, Emerging Contaminants, Great Lakes Restoration Initiative (GLRI), and Solid Waste Infrastructure for Recycling (SWIFR).

1. Signage Requirements

a. Investing in America Emblem: The recipient will ensure that a sign is placed at construction sites supported in whole or in part by this award displaying the official Investing in America emblem and must identify the project as a “project funded by President Biden’s Bipartisan Infrastructure Law” or “project funded by President Biden’s Inflation Reduction Act” as applicable. The sign must be placed at construction sites in an easily visible location that can be directly linked to the work taking place and must be maintained in good condition throughout the construction period.

The recipient will ensure compliance with the guidelines and design specifications provided by EPA for using the official Investing in America emblem available at:

<https://www.epa.gov/invest/investing-america-signage>

b. Procuring Signs: Consistent with section 6002 of RCRA, 42 U.S.C. 6962, and 2 CFR 200.323, recipients are encouraged to use recycled or recovered materials when procuring signs. Signage costs are considered an allowable cost under this assistance agreement provided that the costs associated with signage are reasonable. Additionally, to increase public awareness of projects serving communities where English is not the predominant language, recipients are encouraged to translate the language on signs (excluding the official Investing in America emblem or EPA logo or seal) into the appropriate non-English language(s). The costs of such translation are allowable, provided the costs are reasonable.

2. Public or Media Events

EPA encourages the recipient to notify the EPA Project Officer listed in this award document of public or media events publicizing the accomplishment of significant events related to construction projects as a result of this agreement and provide the opportunity for attendance and participation by federal representatives with at least ten (10) working days’ notice.

AMERICAN IRON AND STEEL ACKNOWLEDGEMENT

The Contractor acknowledges to and for the benefit of the City of _____ (“Purchaser”) and the State of Ohio (the “State”) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Signature

Date

Name and Title of Authorized Signatory, Please Print or Type

Bidder’s Firm

Check here if the WPCLF or WSRLA applicant will be requesting an individual waiver for non-American made iron and steel products. Please note that the waiver box does not need to be marked for nationwide waivers.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 20 2014

OFFICE OF WATER

MEMORANDUM

SUBJECT: Implementation of American Iron and Steel provisions of P.L. 113-76,
Consolidated Appropriations Act, 2014

FROM: f (Andrew D. Sawyers, Director
v) Office of Wastewater Management (4201M)
Peter C. Grevatt, Director
Office of Ground Water and Drinking Water (4601M)

TO: Water Management Division Directors
Regions I - X

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel (AIS)" requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use iron and steel products that are produced in the United States for projects for the construction, alteration, maintenance, or repair of a public water system or treatment works if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Federal Fiscal Year 2014.

Section 436 also sets forth certain circumstances under which EPA may waive the AIS requirement. Furthermore, the Act specifically exempts projects where engineering plans and specifications were approved by a State agency prior to January 17, 2014.

The approach described below explains how EPA will implement the AIS requirement. The first section is in the form of questions and answers that address the types of projects that must comply with the AIS requirement, the types of products covered by the AIS requirement, and compliance. The second section is a step-by-step process for requesting waivers and the circumstances under which waivers may be granted.

Implementation

The Act states:

Sec. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term “iron and steel products” means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the “Administrator”) finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out

the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act.

The following questions and answers provide guidance for implementing and complying with the AIS requirements:

Project Coverage

1) What classes of projects are covered by the AIS requirement?

All treatment works projects funded by a CWSRF assistance agreement, and all public water system projects funded by a DWSRF assistance agreement, from the date of enactment through the end of Federal Fiscal Year 2014, are covered. The AIS requirements apply to the entirety of the project, no matter when construction begins or ends. Additionally, the AIS requirements apply to all parts of the project, no matter the source of funding.

2) Does the AIS requirement apply to nonpoint source projects or national estuary projects?

No. Congress did not include an AIS requirement for nonpoint source and national estuary projects unless the project can also be classified as a 'treatment works' as defined by section 212 of the Clean Water Act.

3) Are any projects for the construction, alteration, maintenance, or repair of a public water system or treatment works excluded from the AIS requirement?

Any project, whether a treatment works project or a public water system project, for which engineering plans and specifications were approved by the responsible state agency prior to January 17, 2014, is excluded from the AIS requirements.

4) What if the project does not have approved engineering plans and specifications but has signed an assistance agreement with a CWSRF or DWSRF program prior to January 17, 2014?

The AIS requirements do not apply to any project for which an assistance agreement was signed prior to January 17, 2014.

5) What if the project does not have approved engineering plans and specifications, but bids were advertised prior to January 17, 2014 and an assistance agreement was signed after January 17, 2014?

If the project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the approval date for purposes of the exemption in section 436(f).

6) What if the assistance agreement that was signed prior to January 17, 2014, only funded a part of the overall project, where the remainder of the project will be funded later with another SRF loan?

If the original assistance agreement funded any construction of the project, the date of the original assistance agreement counts for purposes of the exemption. If the original assistance agreement was only for planning and design, the date of that assistance agreement will count for purposes of the exemption only if there is a written commitment or expectation on the part of the assistance recipient to fund the remainder of the project with SRF funds.

7) What if the assistance agreement that was signed prior to January 17, 2014, funded the first phase of a multi-phase project, where the remaining phases will be funded by SRF assistance in the future?

In such a case, the phases of the project will be considered a single project if all construction necessary to complete the building or work, regardless of the number of contracts or assistance agreements involved, are closely related in purpose, time and place. However, there are many situations in which major construction activities are clearly undertaken in phases that are distinct in purpose, time, or place. In the case of distinct phases, projects with engineering plans and specifications approval or assistance agreements signed prior to January 17, 2014 would be excluded from AIS requirements while those approved/signed on January 17, 2014, or later would be covered by the AIS requirements.

8) What if a project has split funding from a non-SRF source?

Many States intend to fund projects with “split” funding, from the SRF program and from State or other programs. Based on the Act language in section 436, which requires that American iron and steel products be used in any project for the construction, alteration, maintenance, or repair of a public water system or treatment works receiving SRF funding between and including January 17, 2014 and September 30, 2014, any project that is funded in whole or in part with such funds must comply with the AIS requirement. A “project” consists of all construction necessary to complete the building or work regardless of the number of contracts or assistance agreements involved so long as all contracts and assistance agreements awarded are closely related in purpose, time and place. This precludes the intentional splitting of SRF projects into separate and smaller contracts or assistance agreements to avoid AIS coverage on some portion of a larger project, particularly where the activities are integrally and proximately related to the whole. However, there are many situations in which major construction activities are clearly undertaken in separate phases that are distinct in purpose, time, or place, in which

case, separate contracts or assistance agreement for SRF and State or other funding would carry separate requirements.

9) What about refinancing?

If a project began construction, financed from a non-SRF source, prior to January 17, 2014, but is refinanced through an SRF assistance agreement executed on or after January 17, 2014 and prior to October 1, 2014, AIS requirements will apply to all construction that occurs on or after January 17, 2014, through completion of construction, unless, as is likely, engineering plans and specifications were approved by a responsible state agency prior to January 17, 2014. There is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to January 17, 2014.

10) Do the AIS requirements apply to any other EPA programs, besides the SRF program, such as the Tribal Set-aside grants or grants to the Territories and DC?

No, the AIS requirement only applies to funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j-12)

Covered Iron and Steel Products

11) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

- Lined or unlined pipes or fittings;
- Manhole Covers;
- Municipal Castings (defined in more detail below);
- Hydrants;
- Tanks;
- Flanges;
- Pipe clamps and restraints;
- Valves;
- Structural steel (defined in more detail below);
- Reinforced precast concrete; and
- Construction materials (defined in more detail below).

12) What does the term ‘primarily iron or steel’ mean?

‘Primarily iron or steel’ places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

13) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

14) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

15) What is the definition of steel?

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

16) What does ‘produced in the United States’ mean?

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components

do not have to be of domestic origin.

17) Are the raw materials used in the production of iron or steel required to come from US sources?

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

18) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

19) What is the definition of ‘municipal castings’?

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

- Access Hatches;
- Ballast Screen;
- Benches (Iron or Steel);
- Bollards;
- Cast Bases;
- Cast Iron Hinged Hatches, Square and Rectangular;
- Cast Iron Riser Rings;
- Catch Basin Inlet;
- Cleanout/Monument Boxes;
- Construction Covers and Frames;
- Curb and Corner Guards;
- Curb Openings;
- Detectable Warning Plates;
- Downspout Shoes (Boot, Inlet);
- Drainage Grates, Frames and Curb Inlets;
- Inlets;
- Junction Boxes;
- Lampposts;
- Manhole Covers, Rings and Frames, Risers;

Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

20) What is ‘structural steel’?

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

21) What is a ‘construction material’ for purposes of the AIS requirement?

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered “structural steel”. This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

22) What is not considered a ‘construction material’ for purposes of the AIS requirement?

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters,

heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

23) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

24) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin.

If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

Compliance

25) How should an assistance recipient document compliance with the AIS requirement?

In order to ensure compliance with the AIS requirement, specific AIS contract language must be included in each contract, starting with the assistance agreement, all the way down to the purchase agreements. Sample language for assistance agreements and contracts can be found in Appendix 3 and 4.

EPA recommends the use of a step certification process, similar to one used by the Federal Highway Administration. The step certification process is a method to ensure that producers adhere to the AIS requirement and assistance recipients can verify that products comply with the AIS requirement. The process also establishes accountability and better enables States to take enforcement actions against violators.

Step certification creates a paper trail which documents the location of the manufacturing process involved with the production of steel and iron materials. A step certification is a process under which each handler (supplier, fabricator, manufacturer,

processor, etc) of the iron and steel products certifies that their step in the process was domestically performed. Each time a step in the manufacturing process takes place, the manufacturer delivers its work along with a certification of its origin. A certification can be quite simple. Typically, it includes the name of the manufacturer, the location of the manufacturing facility where the product or process took place (not its headquarters), a description of the product or item being delivered, and a signature by a manufacturer's responsible party. Attached, as Appendix 5, are sample certifications. These certifications should be collected and maintained by assistance recipients.

Alternatively, the final manufacturer that delivers the iron or steel product to the worksite, vendor, or contractor, may provide a certification asserting that all manufacturing processes occurred in the US. While this type of certification may be acceptable, it may not provide the same degree of assurance. Additional documentation may be needed if the certification is lacking important information. Step certification is the best practice.

26) How should a State ensure assistance recipients are complying with the AIS requirement?

In order to ensure compliance with the AIS requirement, States SRF programs must include specific AIS contract language in the assistance agreement. Sample language for assistance agreements can be found in Appendix 3.

States should also, as a best practice, conduct site visits of projects during construction and review documentation demonstrating proof of compliance which the assistance recipient has gathered.

27) What happens if a State or EPA finds a non-compliant iron and/or steel product permanently incorporated in the project?

If a potentially non-compliant product is identified, the State should notify the assistance recipient of the apparent unauthorized use of the non-domestic component, including a proposed corrective action, and should be given the opportunity to reply. If unauthorized use is confirmed, the State can take one or more of the following actions: request a waiver where appropriate; require the removal of the non-domestic item; or withhold payment for all or part of the project. Only EPA can issue waivers to authorize the use of a non-domestic item. EPA may use remedies available to it under the Clean Water Act, the Safe Drinking Water Act, and 40 CFR part 31 grant regulations, in the event of a violation of a grant term and condition.

It is recommended that the State work collaboratively with EPA to determine the appropriate corrective action, especially in cases where the State is the one who identifies the item in noncompliance or there is a disagreement with the assistance recipient.

If fraud, waste, abuse, or any violation of the law is suspected, the Office of Inspector General (OIG) should be contacted immediately. The OIG can be reached at 1-888-546-8740 or OIG_Hotline@epa.gov. More information can be found at this website: <http://www.epa.gov/oig/hotline.htm>.

28) How do international trade agreements affect the implementation of the AIS requirements?

The AIS provision applies in a manner consistent with United States obligations under international agreements. Typically, these obligations only apply to direct procurement by the entities that are signatories to such agreements. In general, SRF assistance recipients are not signatories to such agreements, so these agreements have no impact on this AIS provision. In the few instances where such an agreement applies to a municipality, that municipality is under the obligation to determine its applicability and requirements and document the actions taken to comply for the State.

Waiver Process

The statute permits EPA to issue waivers for a case or category of cases where EPA finds (1) that applying these requirements would be inconsistent with the public interest; (2) iron and steel products are not produced in the US in sufficient and reasonably available quantities and of a satisfactory quality; or (3) inclusion of iron and steel products produced in the US will increase the cost of the overall project by more than 25 percent.

In order to implement the AIS requirements, EPA has developed an approach to allow for effective and efficient implementation of the waiver process to allow projects to proceed in a timely manner. The framework described below will allow States, on behalf of the assistance recipients, to apply for waivers of the AIS requirement directly to EPA Headquarters. Only waiver requests received from states will be considered. Pursuant to the Act, EPA has the responsibility to make findings as to the issuance of waivers to the AIS requirements.

Definitions

The following terms are critical to the interpretation and implementation of the AIS requirements and apply to the process described in this memorandum:

Reasonably Available Quantity: The quantity of iron or steel products is available or will be available at the time needed and place needed, and in the proper form or specification as specified in the project plans and design.

Satisfactory Quality: The quality of iron or steel products, as specified in the project plans and designs.

Assistance Recipient: A borrower or grantee that receives funding from a State CWSRF or DWSRF program.

Step-By-Step Waiver Process

Application by Assistance Recipient

Each local entity that receives SRF water infrastructure financial assistance is required by section 436 of the Act to use American made iron and steel products in the construction of its project. However, the recipient may request a waiver. Until a waiver is granted by EPA, the AIS requirement stands, except as noted above with respect to municipalities covered by international agreements.

The waiver process begins with the SRF assistance recipient. In order to fulfill the AIS requirement, the assistance recipient must in good faith design the project (where applicable) and solicit bids for construction with American made iron and steel products. It is essential that the assistance recipient include the AIS terms in any request for proposals or solicitations for bids, and in all contracts (see Appendix 3 for sample construction contract language). The assistance recipient may receive a waiver at any point before, during, or after the bid process, if one or more of three conditions is met:

1. Applying the American Iron and Steel requirements of the Act would be inconsistent with the public interest;
2. Iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or
3. Inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Proper and sufficient documentation must be provided by the assistance recipient. A checklist detailing the types of information required for a waiver to be processed is attached as Appendix 1.

Additionally, it is strongly encouraged that assistance recipients hold pre-bid conferences with potential bidders. A pre-bid conference can help to identify iron and steel products needed to complete the project as described in the plans and specifications that may not be available from domestic sources. It may also identify the need to seek a waiver prior to bid, and can help inform the recipient on compliance options.

In order to apply for a project waiver, the assistance recipient should email the request in the form of a Word document (.doc) to the State SRF program. It is strongly recommended that the State designate a single person for all AIS communications. The State SRF designee will review the application for the waiver and determine whether the necessary information has been included. Once the waiver application is complete, the State designee will forward the application to the EPA for review.

Evaluation by EPA

After receiving an application for waiver of the AIS requirements, EPA Headquarters will publish the request on its website for 15 days and receive informal comment. EPA Headquarters will then use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to

determine whether or not to grant the waiver.

In the event that EPA finds that adequate documentation and justification has been submitted, the Administrator may grant a waiver to the assistance recipient. EPA will notify the State designee that a waiver request has been approved or denied as soon as such a decision has been made. Granting such a waiver is a three-step process:

1. Posting – After receiving an application for a waiver, EPA is required to publish the application and all material submitted with the application on EPA’s website for 15 days. During that period, the public will have the opportunity to review the request and provide informal comment to EPA. The website can be found at: http://water.epa.gov/grants_funding/aisrequirement.cfm
2. Evaluation – After receiving an application for waiver of the AIS requirements, EPA Headquarters will use the checklist in Appendix 2 to determine whether the application properly and adequately documents and justifies the statutory basis cited for the waiver – that it is quantitatively and qualitatively sufficient – and to determine whether or not to grant the waiver.
3. Signature of waiver approval by the Administrator or another agency official with delegated authority – As soon as the waiver is signed and dated, EPA will notify the State SRF program, and post the signed waiver on our website. The assistance recipient should keep a copy of the signed waiver in its project files.

Public Interest Waivers

EPA has the authority to issue public interest waivers. Evaluation of a public interest waiver request may be more complicated than that of other waiver requests so they may take more time than other waiver requests for a decision to be made. An example of a public interest waiver that might be issued could be for a community that has standardized on a particular type or manufacturer of a valve because of its performance to meet their specifications. Switching to an alternative valve may require staff to be trained on the new equipment and additional spare parts would need to be purchased and stocked, existing valves may need to be unnecessarily replaced, and portions of the system may need to be redesigned. Therefore, requiring the community to install an alternative valve would be inconsistent with public interest.

EPA also has the authority to issue a public interest waiver that covers categories of products that might apply to all projects.

EPA reserves the right to issue national waivers that may apply to particular classes of assistance recipients, particular classes of projects, or particular categories of iron or steel products. EPA may develop national or (US geographic) regional categorical waivers through the identification of similar circumstances in the detailed justifications presented to EPA in a waiver request or requests. EPA may issue a national waiver based on policy decisions regarding the public's interest or a determination that a particular item is not produced domestically in reasonably available quantities or of a sufficient quality. In such cases, EPA may determine it is necessary to issue a national waiver.

If you have any questions concerning the contents of this memorandum, you may contact us, or have your staff contact Jordan Dorfman, Attorney-Advisor, State Revolving Fund Branch, Municipal Support Division, at dorfman.jordan@epa.gov or (202) 564-0614 or Kiri Anderer, Environmental Engineer, Infrastructure Branch, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

Attachments

Appendix 1: Information Checklist for Waiver Request

The purpose of this checklist is to help ensure that all appropriate and necessary information is submitted to EPA. EPA recommends that States review this checklist carefully and provide all appropriate information to EPA. This checklist is for informational purposes only and does not need to be included as part of a waiver application.

Items	✓	Notes
<p>General</p> <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> — Description of the foreign and domestic construction materials — Unit of measure — Quantity — Price — Time of delivery or availability — Location of the construction project — Name and address of the proposed supplier — A detailed justification for the use of foreign construction materials • Waiver request was submitted according to the instructions in the memorandum • Assistance recipient made a good faith effort to solicit bids for domestic iron and steel products, as demonstrated by language in requests for proposals, contracts, and communications with the prime contractor 		
<p>Cost Waiver Requests</p> <ul style="list-style-type: none"> • Waiver request includes the following information: <ul style="list-style-type: none"> — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — Supporting documentation indicating that the contractor made a reasonable survey of the market, such as a description of the process for identifying suppliers and a list of contacted suppliers 		
<p>Availability Waiver Requests</p> <ul style="list-style-type: none"> • Waiver request includes the following supporting documentation necessary to demonstrate the availability, quantity, and/or quality of the materials for which the waiver is requested: <ul style="list-style-type: none"> — Supplier information or pricing information from a reasonable number of domestic suppliers indicating availability/delivery date for construction materials — Documentation of the assistance recipient's efforts to find available domestic sources, such as a description of the process for identifying suppliers and a list of contacted suppliers. — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of construction materials • Waiver request includes a statement from the prime contractor and/or supplier confirming the non-availability of the domestic construction materials for which the waiver is sought • Has the State received other waiver requests for the materials described in this waiver request, for comparable projects? 		

Appendix 2: HQ Review Checklist for Waiver Request

Instructions: To be completed by EPA. Review all waiver requests using the questions in the checklist, and mark the appropriate box as Yes, No or N/A. Marks that fall inside the shaded boxes may be grounds for denying the waiver. If none of your review markings fall into a shaded box, the waiver is eligible for approval if it indicates that one or more of the following conditions applies to the domestic product for which the waiver is sought:

1. The iron and/or steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality.
2. The inclusion of iron and/or steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

Review Items	Yes	No	N/A	Comments
<p>Cost Waiver Requests</p> <ul style="list-style-type: none"> • Does the waiver request include the following information? <ul style="list-style-type: none"> — Comparison of overall cost of project with domestic iron and steel products to overall cost of project with foreign iron and steel products — Relevant excerpts from the bid documents used by the contractors to complete the comparison — A sufficient number of bid documents or pricing information from domestic sources to constitute a reasonable survey of the market • Does the Total Domestic Project exceed the Total Foreign Project Cost by more than 25%? 				
<p>Availability Waiver Requests</p> <ul style="list-style-type: none"> • Does the waiver request include supporting documentation sufficient to show the availability, quantity, and/or quality of the iron and/or steel product for which the waiver is requested? <ul style="list-style-type: none"> — Supplier information or other documentation indicating availability/delivery date for materials — Project schedule — Relevant excerpts from project plans, specifications, and permits indicating the required quantity and quality of materials • Does supporting documentation provide sufficient evidence that the contractors made a reasonable effort to locate domestic suppliers of materials, such as a description of the process for identifying suppliers and a list of contacted suppliers? • Based on the materials delivery/availability date indicated in the supporting documentation, will the materials be unavailable when they are needed according to the project schedule? (By item, list schedule date and domestic delivery quote date or other relevant information) • Is EPA aware of any other evidence indicating the non-availability of the materials for which the waiver is requested? Examples include: <ul style="list-style-type: none"> — Multiple waiver requests for the materials described in this waiver request, for comparable projects in the same State — Multiple waiver requests for the materials described in this waiver request, for comparable projects in other States — Correspondence with construction trade associations indicating the non-availability of the materials • Are the available domestic materials indicated in the bid documents of inadequate quality compared those required by the project plans, specifications, and/or permits? 				

Appendix 3: Example Loan Agreement Language

ALL ASSISTANCE AGREEMENT MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN SRF ASSISTANCE AGREEMENTS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE LAW:

Comply with all federal requirements applicable to the Loan (including those imposed by the 2014 Appropriations Act and related SRF Policy Guidelines) which the Participant understands includes, among other, requirements that all of the iron and steel products used in the Project are to be produced in the United States (“American Iron and Steel Requirement”) unless (i) the Participant has requested and obtained a waiver from the Agency pertaining to the Project or (ii) the Finance Authority has otherwise advised the Participant in writing that the American Iron and Steel Requirement is not applicable to the Project.

Comply with all record keeping and reporting requirements under the Clean Water Act/Safe Drinking Water Act, including any reports required by a Federal agency or the Finance Authority such as performance indicators of program deliverables, information on costs and project progress. The Participant understands that (i) each contract and subcontract related to the Project is subject to audit by appropriate federal and state entities and (ii) failure to comply with the Clean Water Act/Safe Drinking Water Act and this Agreement may be a default hereunder that results in a repayment of the Loan in advance of the maturity of the Bonds and/or other remedial actions.

Appendix 4: Sample Construction Contract Language

ALL CONTRACTS MUST HAVE A CLAUSE REQUIRING COMPLIANCE WITH THE AIS REQUIREMENT. THIS IS AN EXAMPLE OF WHAT COULD BE INCLUDED IN ALL CONTRACTS IN PROJECTS THAT USE SRF FUNDS. EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THIS CLAUSE WITH RESPECT TO STATE OR LOCAL LAW:

The Contractor acknowledges to and for the benefit of the City of _ (“Purchaser”) and the

_(the “State”) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

Appendix 5: Sample Certifications

The following information is provided as a sample letter of **step** certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location:

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative

**American Iron & Steel (AIS) Requirement of the Consolidated Appropriations Act of 2014
(Public Law 113-76)**

Q&A Part 2

PRODUCT QUESTIONS

1. Q: Do all fasteners qualify for de minimis exemption?

A: No. There is no broad exemption for fasteners from the American Iron and Steel (AIS) requirements. Significant fasteners used in SRF projects are not subject to the de minimis waiver for projects and must comply with the AIS requirements. Significant fasteners include fasteners produced to industry standards (e.g., ASTM standards) and/or project specifications, special ordered or those of high value. When bulk purchase of unknown-origin fasteners that are of incidental use and small value are used on a project, they may fall under the national de minimis waiver for projects. The list of potential items could be varied, such as big-box/hardware-store-variety screws, nails, and staples. The key characteristics of the items that may qualify for the de minimis waiver would be items that are incidental to the project purpose (such as drywall screws) and not significant in value or purpose (such as common nails or brads).

EPA also clarifies that minor components of two listed products – valves and hydrants -- may not need to meet the AIS requirements if the minor components compromise a very small quantity of minor, low-cost fasteners that are of unknown origin.

2. Q: Does PCCP pipe have to be domestically produced?

A: Yes. Pre-stressed concrete cylinder pipe (PCCP) or other similar concrete cylinder pipes would be comparable to pre-cast concrete which is specifically listed in the Consolidated Appropriations Act of 2014 as a product subject to the AIS requirement.

3. Q: If the iron or steel is made from recycled metals will the vendor/supplier have to provide a certification document certifying that the recycled metals are domestically produced?

A: No. Recycled source materials used in the production of iron and steel products do not have to come from the U.S. Iron or steel scrap, for instance, are considered raw materials that may come from anywhere. While certification is not required for the raw material, EPA does recommend that additional final processing of iron and steel be certified to have occurred in the U.S.

4. Q: Do tanks used for filtration systems, if delivered to the construction site separately and then filled with filtration media onsite, have to be domestically produced?

A: No. Tanks that are specifically designed to be filters, or as parts of a filtration system, do not have to be domestically produced because these parts are no longer simply tanks, even if the filter media has not been installed and will be installed at the project site, as is customary to do for shipping purposes. These parts have only one purpose which is to be housing for filters and cannot be used in another fashion.

5. Q: Can a recipient use non-domestic flanged pipe?

A: No. While the Consolidated Appropriations Act of 2014 does not specifically mention flanged pipe, since it does mention both pipe and flanges, both products would need to be domestically produced. Therefore, flanged pipe would also need to be domestically produced.

6. Q: Can a recipient use non-domestic couplings, expansion joints, and other similar pipe connectors?

A: No. These products would be considered specialty fittings, due to their additional functionality, but still categorized under the larger “fitting” categorization. Fittings are defined as a material that joins pipes together or connects to a pipe (AWWA, The Drinking Water Dictionary, 2000). Therefore, these products must comply with the AIS requirements and be produced domestically.

7. Q: Can a recipient use non-domestic service saddles and tapping sleeves?

A: No. These products are necessary for pipe repair, to tap a water main, or to install a service or house connection. Therefore, they are included under the larger “pipe restraint” category which is a specifically identified product subject to the domestic preference in the Consolidated Appropriations Act of 2014.

8. Q: The AIS guidance does not appear to cover reused items (i.e., existing pipe fittings, used storage tanks, reusing existing valves). How should reused items be addressed?

A: The AIS guidance does not address reuse of items. Reuse of items that would otherwise be covered by AIS is acceptable provided that the item(s) was originally purchased prior to January 17, 2014, the reused item(s) is not substantially altered from original form/function, and any restoration work that may be required does not include the replacement or addition of foreign iron or steel replacement parts. EPA recommends keeping a log of these reused items by including them on the assistance recipient’s de minimis list, and stating therein that these items are reused products. The donation of new items (such as a manufacturer waiving cost for certain delivered items because of concerns regarding the origin of a new product) is not, however, considered reuse.

9. Q: What does “time needed” mean in the AIS guidance, in reference to the definition of “Reasonably Available Quantity”?

A: For considering whether a product would meet reasonably available quantity, “time needed” is based on the construction schedule. If the item is delayed and there is substantial impact on the overall construction schedule, this would not be according to the “time needed.”

10. Q: If a product is not specifically included on the list of AIS covered products, must it comply with AIS?

A: Possibly. The AIS requirements include a list of specifically covered products, one of which is construction materials, a broad category of potential products. For construction materials, EPA’s AIS guidance includes a set of example items that it considers construction materials composed primarily of iron and steel and covered by the Act. This example list in the guidance is not an all-inclusive list of potential construction materials. However, the guidance also includes a list of items that EPA specifically does not consider construction materials, generally those of electrical or complex-mechanical nature. If a product is similar to the ones in the non-construction material list (and it is also not specifically listed by the Act), it is not a construction material. For all other items specifically included in the Act, coverage is generally self-evident.

11. Q: If a listed iron and steel product is used as a part for an assembled product that is non-domestic, do the AIS requirements apply?

A: AIS requirements only apply to the final product as delivered to the work site and incorporated into the project. Other assemblies, such as a pumping assembly or a reverse osmosis package plant, are distinct products not listed and do not need to be made in the U.S. or composed of all U.S. parts. Therefore, for the case of a non-covered product used in a larger non-domestic assembly, the components, even if specifically listed in the Consolidated Appropriations Act, do not have to be domestically produced.

12. Q: Is cast iron excluded from the AIS requirements?

A: No. Cast iron products that fall under the definition of iron and steel products must comply with the AIS requirements.

13. Q: The guidance states that “construction materials” do not include mechanical equipment, but then identifies ductwork as a construction material. Please clarify.

A: Ductwork is not mechanical equipment, therefore it is considered a “construction material” and must comply with the AIS requirements.

14. Q: Do “meters” mentioned in EPA’s guidance as non-construction materials include both flow meters and water meters?

A: Yes. “Meters” includes any type of meter, including: flow meters, wholesale meters, and water meters/service connections.

15. Q: Must coiled steel be domestic?

A: Yes. Coiled steel is an intermediate product used in the production of steel pipe and must come from a U.S. source or subject to a waiver in order to comply with the AIS requirements.

16. Q: Are pig iron, direct reduced iron (DRI), and ingot considered raw materials?

A: No. These are considered intermediate products used in the production of iron or steel and must come from a U.S. source or subject to a waiver in order to comply with the AIS requirements.

17. Q: Can assistance recipients rely on a marking that reads, “Made in the USA,” as evidence that all processes took place in the U.S.?

A: No. This designation is not consistent with our requirements that all manufacturing processes of iron and steel products must take place in the U.S.

18. Q: When determining what constitutes a product made “primarily” of iron or steel, who makes this determination?

A: The manufacturer will show if its product qualifies as primarily made of iron or steel. The recipient should expect the manufacturer to provide documentation/ certification that its product is AIS compliant.

19. Q: Do aerators need to be produced domestically in order to comply with AIS?

A: No. Aerators, similar to pumps, are mechanical equipment that do not need to meet the AIS requirements. “Blowers/aeration equipment, compressors” are listed in EPA’s guidance as non-construction materials.

20. Q: Are Sluice and Slide Gates considered valves?

A: No. Valves are products that are generally encased / enclosed with a body, bonnet, and stem. Examples include enclosed butterfly, ball, globe, piston, check, wedge, and gate valves. Furthermore, “gates” (meaning sluice, slide or weir gates) are listed in EPA’s guidance as non-construction materials.

AIS PROCESS QUESTIONS

21. Q: Will notices of waiver applications be published in the federal register?

A: No. Applications for waivers will be published on EPA’s website (http://water.epa.gov/grants_funding/aisrequirement.cfm). EPA will provide 15 days for open public comment, as noted on the website.

22. Q: Will states be collecting the step certification paper trail, as presented in the AIS guidance?

A. No. Assistance recipients must maintain documentation of compliance with AIS. EPA recommends use of the step certification process. This process is a best practice and traces all manufacturing of iron and steel products to the U.S. If the process is used, the state does not have to collect the documentation. The documents must be kept by the assistance recipient and reviewed by the state during project reviews.

23. Q: Why is it considered a best practice for states to conduct site visits, when it is the assistance recipient's responsibility to meet the AIS requirements?

A: It is both the assistance recipient's and the state's responsibility to ensure compliance with the AIS requirements. The state is the recipient of a federal grant and must comply with all grant conditions, including a condition requiring that the AIS requirements be adhered to. Therefore, it is recommended that states conduct site visits of projects during construction and review documentation demonstrating the assistance recipient's proof of compliance.

24. Q: Please further define the state's role in the waiver process.

A: The state's role in the waiver process is to review any waiver requests submitted to the state in order to ensure that all necessary information has been provided by the assistance recipient prior to forwarding the request to EPA. If a state finds the request lacking, the state should work with the assistance recipient to help obtain complete information.

25. Q: How much time does EPA have to evaluate the waiver during the evaluation step?

A: At a minimum, EPA is required to provide 15 days for open public comment. There is no specific deadline or time limit for EPA to review waiver requests. Each waiver request will come with its own specific details and circumstances and may require a different amount of time for review and analysis. For example, public interest waivers in general may take longer to review than availability waivers which are typically more straightforward. However, EPA understands that construction may be delayed while waiting for a waiver and will make every effort to review and issue decisions on waiver requests in a timely manner.

PROJECT QUESTIONS

26. Q: What if a project is funded by another funding entity (i.e., United States Department of Agriculture – Rural Development) where AIS is not required and begins construction after January 17, 2014 but then applies to the SRF to refinance the project? Are they ineligible?

A: The project is not ineligible. AIS requirements will apply to any construction that occurs after the assistance agreement is signed, through the end of construction. If construction is complete, there is no retroactive application of the AIS requirements.

27. Q: If the assistance recipient can demonstrate through market research that the AIS requirement will exceed the 25 percent cost threshold, is the entire project exempt from the AIS requirement?

A: If the waiver application shows that the inclusion of American iron and steel products causes the entire cost of the project to increase by more the 25 percent, a waiver may be granted for the entirety of the project.

28. Q: Can the recipient use non-SRF funds to pay for the non-compliant item.

A: No. It is not an acceptable to use non-SRF funds to pay for a non-compliant item. The Consolidated Appropriations Act of 2014 requires that all iron and steel products, no matter the source of funding, must be made in the U.S. if SRF funds are used in the project.

29. Q: What constitutes “satisfactory quality” as defined in the AIS guidance, in reference to the availability waiver process.

A: “Satisfactory quality” means the product meets the project design specifications. A waiver may be granted if a recipient determines that the project plans and design would be compromised because there are no American made products available that meet the project design specifications.

30. Q: The guidance states that the AIS requirement applies to any project “funded in whole or in part” by an SRF. Where is this in the Act?

A: The Act states that, “None of the funds made available by a ... [State SRF program] ... shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.” This sentence clearly states that no SRF program may use its funds for a project unless all of the iron and steel products used in the project are made in the U.S. This is true even if only \$1 of SRF funding is used in the project.

31. Q: There is always an expectation on the part of an assistance recipient that the construction phase of a planning and/or design only loan will be funded through the SRF. If the original planning and/or design only loan was executed prior to a January 17, 2014, does this mean the entire project will be exempt from the AIS requirement?

A: If the original loan includes construction, and was executed prior to January 17, 2014, then the AIS provision does not apply to the project. If the original loan was only for planning and/or design, then a written commitment or documented “expectation” is needed to show exemption from the

requirements. Appearance on a priority list in an Intended Use Plan along with written reasonable assurance from the state that the recipient will receive SRF funding for project construction could provide sufficient evidence of “expectation of funding”.

32. Q: What if there has been a change order or redesign requiring new plans and specifications to be approved and they were approved after January 17, 2014: does the project now have to comply with AIS?

A: In most cases, no. Change orders are typically small enough changes that the original plan and specification date will still hold true. For example, if a pipe alignment has to be changed for a block or two due to unforeseen conditions, but new plans and specifications had to be submitted for this section of the project, then that could be considered a minor change. However, if there has been a major redesign, perhaps the whole project had to be redesigned starting from scratch, then the new plans and specification approval date would apply.

33. Q: What if the bids on a project with plans and specifications approved before January 17, 2014 but the loan is signed after January 17, 2014 come in low, and there is significant funding remaining in the loan agreement, so the community designs a second project with the remaining funds: does that project have to comply with the AIS requirements?

A: If the second project is closely related in purpose, place and time to the first project, then the second project would be exempt from the AIS requirements. It is the assistance recipient’s responsibility (with state oversight) to show that a project is closely related, or not, in purpose, place and time.

34. Q: What if the assistance agreement was signed after January 17, 2014, state approval of plans for the first phase of the project was in place prior to January 17, 2014, but state approval of the plans for the second phase of the project was received after January 17, 2014?

A: In such a case, the AIS provision would not apply to the first phase of the project. If the second phase of the project is considered the same project as the first phase, due to its close relation in purpose, place and time, the entire project may be exempt. It is the assistance recipient’s responsibility (with state oversight) to show that phases of a project is closely related, or not, in purpose, place and time.

35. Q: Do products purchased through procurement-only contracts have to be comply with AIS?

A: Yes. For projects funded by SRF, the products procured under any form of contract must comply with AIS. A procurement-only contract generally involves the bulk purchase of common items (such as pipe, concrete, and/or pumps) of independent timing from a set of planned projects. If products which are purchased through a procurement-only contract are being installed under another contract, the procurement-only contract would probably not be considered a separate project in purpose, place and time; and therefore, would have to comply with the AIS requirements.

March 2015

American Iron & Steel Requirement for the Clean Water and Drinking Water State Revolving Funds

Q&A Part 3

*For CWSRF and DWSRF: On **January 17, 2014**, Public Law 113-76, the "Consolidated Appropriations Act, 2014," was enacted and included an American Iron and Steel requirement for the Clean Water and Drinking Water State Revolving Fund programs through the end of fiscal year 2014. Since then, the AIS requirement has continued for both programs, but through different statutes, with a few changes as described in the questions and answers provided below.*

*For CWSRF: On **June 10, 2014**, the Water Resources Reform and Development Act amended the Clean Water Act to include permanent requirements for the use of AIS products in CWSRF assistance agreements. Section 608 of the CWA now contains requirements for AIS that repeat those of the Consolidated Appropriations Act, 2014. All CWSRF assistance agreements must comply with Section 608 of the CWA for implementation of the permanent AIS requirement.*

*For DWSRF: On **December 16, 2014**, the President signed Public Law 113- 235, the "Consolidated and Further Continuing Appropriations Act, 2015," which provides fiscal year 2015 full-year appropriations through September 30, 2015. This law continues the requirement for the use of AIS products in DWSRF assistance agreements through September 30, 2015.*

CWSRF PROGRAM

- 1. Q: The Water Resources Reform and Development Act amended the Clean Water Act to include permanent requirements for the use of AIS for CWSRF funded assistance agreements. Does the CWA include an exemption for plans and specifications approved prior to the enactment of the legislation similar to the exemption included in the Consolidated Appropriations Act (CAA) 2014?**

A: Yes. The WRRDA amendment to the CWA, which included AIS requirements, included a similar exemption as the CAA 2014. For any CWSRF assistance agreement signed on or after October 1, 2014, if the plans and specifications were approved prior to June 10, 2014 (the enactment of WRRDA), then the project is exempt from AIS requirements. For assistance agreements signed prior to October 1, 2014, the previous dates in the CAA 2014 apply (see March 20, 2014, AIS guidance document).

If a project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the plans and specifications approval date for purposes of this exemption in Section 608 (f).

The following table summarizes AIS exemptions based on the plans and specifications approval date for CWSRF funded projects.

CWSRF AIS Project Exemption Based on Plans and Specifications Approval Date		
<u>Assistance Agreement Signed:</u>	<u>Exempt from AIS if Plans and Specifications Were Approved Before:</u>	<u>Basis for Exemption:</u>
1/17/2014 through 9/30/2014	4/15/2014	<ul style="list-style-type: none"> • Consolidated Appropriations Act 2014 • National waiver signed 4/15/2014*
On or after 10/1/2014	6/10/2014	<ul style="list-style-type: none"> • Clean Water Act Section 608

** To be covered by the national waiver, the plans and specifications had to be submitted to the state prior to 1/17/2014*

2. Q: Does the AIS requirement apply to refinanced CWSRF projects?

A: Yes, in some cases. If a project began construction, financed from a non-CWSRF source prior to June 10, 2014, but is refinanced through a CWSRF assistance agreement executed on or after October 1, 2014, AIS requirements will apply to all construction that occurs on or after June 10, 2014, through completion of construction, unless engineering plans and specifications were approved by the responsible state agency prior to June 10, 2014. For CWSRF projects funded on or after October 1, 2014, there is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to June 10, 2014.

DWSRF PROGRAM

3. Q: The Consolidated and Further Continuing Appropriations Act 2015 continues the AIS requirements for DWSRF funded assistance agreements. Does the Act include an exemption for plans and specifications approved prior to the enactment of the legislation, similar to the exemption included in the Consolidated Appropriations Act (CAA) 2014?

A: Yes. The Consolidated and Further Continuing Appropriations Act 2015 includes a similar exemption as the CAA 2014. For any assistance agreement signed on or after December 16, 2014 (the enactment of the Act), if the plans and specifications were approved prior to December 16, 2014, then the project is exempt from the AIS requirements. For assistance agreements signed prior to December 16, 2014, the previous dates in the CAA 2014 apply (see March 20, 2014 AIS guidance document).

If a project does not require approved engineering plans and specifications, the bid advertisement date will count in lieu of the plans and specifications approval date for purposes of the exemption in Section 424(f).

4. Q: Do DWSRF assistance agreements signed during the time period between September 30, 2014, and December 16, 2014, still have to comply with the AIS requirements?

A: Yes. The Continuing Appropriations Resolution 2015 was signed on September 19, 2014, which extended funding for the DWSRF with the same conditions that were made applicable by the language in the Fiscal Year 2014 appropriations, including the requirement for the use of American Iron and Steel products in projects receiving financial assistance from the DWSRF. Therefore, all assistance agreements starting October 1, 2014, through the enactment of the Consolidated and Further Continuing Appropriations Act 2015 (signed December 16, 2014), must include the AIS requirements. However, if the plans and specifications for any of these projects were approved prior to April 15, 2014 (the date the national waiver was signed), then the project is exempt from the AIS requirements.

The following table summarizes AIS exemptions based on the plans and specifications approval date for DWSRF funded projects.

DWSRF AIS Project Exemption Based on Plans and Specifications Approval Date		
<u>Assistance Agreement Signed:</u>	<u>Exempt from AIS if Plans and Specifications Were Approved Before:</u>	<u>Basis for Exemption:</u>
1/17/2014 through 9/30/2014	4/15/2014	<ul style="list-style-type: none"> Consolidated Appropriations Act 2014 National waiver signed 4/15/2014*
10/1/2014 through 12/15/2014	4/15/2014	<ul style="list-style-type: none"> Continuing Appropriations Resolution 2015 (continued CAA 2014 requirements)** National waiver signed 4/15/2014*
12/16/2014 through 9/30/2015	12/16/2014	<ul style="list-style-type: none"> Consolidated and Further Continuing Appropriations Act 2015

* To be covered by the national waiver, the plans and specifications had to be submitted to the state prior to 1/17/2014

** Following the first continuing resolution, there were two additional CRs to fill the gap between 12/11/2014 and 12/16/2014

5. Q: Does the AIS requirement apply to refinanced DWSRF projects?

A: Yes, in some cases. If a project began construction, financed from a non-DWSRF source prior to December 16, 2014, but is refinanced through a DWSRF assistance agreement executed on or after December 16, 2014, AIS requirements will apply to all construction that occurs on or after December 16, 2014, through completion of construction, unless engineering plans and

specifications were approved by the responsible state agency prior to December 16, 2014. For DWSRF projects funded on or after December 16, 2014, there is no retroactive application of the AIS requirements where a refinancing occurs for a project that has completed construction prior to December 16, 2014.

BOTH CWSRF AND DWSRF PROGRAMS

6. **Q: If a coating is applied to the external surface of a domestic iron or steel component, and the application takes place outside of the United States, would the product be compliant under the AIS requirements?**

A: Yes. The product would still be considered a compliant product under AIS requirements. Any coating processes that are applied to the external surface of iron and steel components that would otherwise be AIS compliant would not disqualify the product from meeting the AIS requirements regardless of where the coating processes occur, provided that final assembly of the product occurs in the United States.

The exemption above only applies to coatings on the *external surface* of iron and steel components. It does not apply to coatings or linings on internal surfaces of iron and steel products, such as the lining of lined pipes. All manufacturing processes for lined pipes, including the application of pipe lining, must occur in the United States for the product to be compliant with AIS requirements.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WAIRM

DECISION MEMORANDUM

SUBJECT: De Minimis Waiver of Section 436 of P.L. 113-76, Consolidated Appropriations Act (CAA), 2014

FROM: Nancy K. Stoner
Acting Assistant Administrator

The EPA is hereby granting a nationwide waiver pursuant to the "American Iron and Steel (AIS)" requirements of P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), section 436 under the authority of Section 436(b)(1) (public interest waiver) for de minimis incidental components of eligible water infrastructure projects. This action permits the use of products when they occur in de minimis incidental components of such projects funded by the Act that may otherwise be prohibited under section 436(a). Funds used for such de minimis incidental components cumulatively may comprise no more than a total of 5 percent of the total cost of the materials used in and incorporated into a project; the cost of an individual item may not exceed 1 percent of the total cost of the materials used in and incorporated into a project.

P.L. 113-76, Consolidated Appropriations Act, 2014 (Act), includes an "American Iron and Steel" (AIS) requirement in section 436 that requires Clean Water State Revolving Loan Fund (CWSRF) and Drinking Water State Revolving Loan Fund (DWSRF) assistance recipients to use specific domestic iron and steel products that are produced in the United States if the project is funded through an assistance agreement executed beginning January 17, 2014 (enactment of the Act), through the end of Fiscal Year 2014, unless the agency determines it necessary to waive this requirement based on findings set forth in Section 436(b). The Act states, "[the requirements] shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency...finds that- (1) applying subsection (a) would be inconsistent with the public interest" 436(b)(1).

In implementing section 436 of the Act, the EPA must ensure that the section's requirements are applied consistent with congressional intent in adopting this section and in the broader context of the purposes, objectives, and other provisions applicable to projects funded under the SRF. Water infrastructure projects typically contain a relatively small number of high-cost components incorporated into the project. In bid solicitations for a project, these high-cost components are generally described in detail via project specific technical specifications. For these major components, utility owners and their contractors are generally familiar with the conditions of availability, the potential alternatives for each detailed specification, the approximate cost, and the country of manufacture of the available components.

Every water infrastructure project also involves the use of thousands of miscellaneous, generally low-cost components that are essential for, but incidental to, the construction and are incorporated into the physical structure of the project. For many of these incidental components, the country of manufacture and the availability of alternatives is not always readily or reasonably identifiable prior to procurement in the normal course of business; for other incidental components, the country of manufacture may be known but the miscellaneous character in conjunction with the low cost, individually and (in total) as typically procured in bulk, mark them as properly incidental. Examples of incidental components could include small washers, screws, fasteners (i.e., nuts and bolts), miscellaneous wire, corner bead, ancillary tube, etc. Examples of items that are clearly not incidental include significant process fittings (i.e., tees, elbows, flanges, and brackets), distribution system fittings and valves, force main valves, pipes for sewer collection and/or water distribution, treatment and storage tanks, large structural support structures, etc.

The EPA undertook multiple inquiries to identify the approximate scope of de minimis incidental components within water infrastructure projects during the implementation of the American Reinvestment and Recovery Act (ARRA) and its requirements (Buy American provisions, specifically). The inquiries and research conducted in 2009 applies suitably for the case today. In 2009, the EPA consulted informally with many major associations representing equipment manufacturers and suppliers, construction contractors, consulting engineers, and water and wastewater utilities, and performed targeted interviews with several well-established water infrastructure contractors and firms who work in a variety of project sizes, and regional and demographic settings to ask the following questions:

- What percentage of total project costs were consumables or incidental costs?
- What percentage of materials costs were consumables or incidental costs?
- Did these percentages vary by type of project (drinking water vs. wastewater treatment plant vs. pipe)?

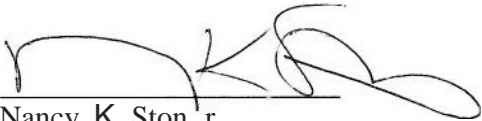
The responses were consistent across the variety of settings and project types, and indicated that the percentage of total costs for drinking water or wastewater infrastructure projects represented by these incidental components is generally not in excess of 5 percent of the total cost of the materials used in and incorporated into a project. In drafting this waiver, the EPA has considered the de minimis proportion of project costs generally represented by each individual type of these incidental components within the many types of such components comprising those percentages, the fact that these types of incidental components are obtained by contractors in many different ways from many different sources, and the disproportionate cost and delay that would be imposed on projects if the EPA did not issue this waiver.

Assistance recipients who wish to use this waiver should in consultation with their contractors determine the items to be covered by this waiver and must retain relevant documentation (i.e., invoices) as to those items in their project files.

If you have any questions concerning the contents of this memorandum, please contact Timothy Connor, Chemical Engineer, Municipal Support Division, at connor.timothy@epa.gov or (202) 566-1059 or Kirsten Anderer, Environmental Engineer, Drinking Water Protection Division, at anderer.kirsten@epa.gov or (202) 564-3134.

A?R t5 2014

Issued on: _____

Approved by: 

Nancy K. Stoner
Acting Assistant Administrator

Violating Facilities Clause
(Required Contract Provision)

Language prohibiting this use of equipment or services from anyone on the EPA List of Violating Facilities must be included in the contract documents.

Violating Facilities:

The Contractor agrees to comply with all applicable standards, orders or requirements under Section 306 of the Clean Air Act, 42 USC 1857 (h), Section 508 of the Clean Water Act, 33 USC 1368, Executive Order 11738, and EPA regulations, 40 CFR Part 32, which prohibits the use under non-exempt Federal contracts, grants, or loans of facilities included on the EPA List of Violating Facilities.

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Requirement For Utilization Of Small Businesses In Rural Areas (SBRA)

(Required Contract Provision)

The following policy should be added to the “Instructions to Bidders” section and referenced in the Table of Contents for the contract documents:

This procurement is subject to the EPA policy of encouraging the participation of small businesses in rural areas. It is EPA policy that recipients of EPA financial assistance awards utilize the services of small businesses in rural areas (SBRAs), to the maximum extent practicable. The objective is to assure that such small business entities are afforded the maximum practicable opportunity to participate as subcontractors, suppliers and otherwise in EPA-awarded financial assistance programs. This policy applies to all contracts and subcontracts for supplies, construction, and services under EPA grants or cooperative agreements. Small purchases are also subject to this policy.

If possible, also add the following language to the “Advertisement for Bids”:

This procurement is subject to the EPA policy of encouraging the participation of small business in rural areas (SBRAs).

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Insurance Provisions
(Required Contract Provision)

Section 3.5 of the WPCLF/WSRLA Loan Agreement contains specific requirements regarding insurance for all contractors and all subcontractors for the life of the contract. These insurance requirements must be reflected in the contract documents. Adjust the following language as needed to meet the specifics of the construction project and local requirements while still meeting the provisions of the Loan Agreement.

The Contractor shall, at his expense, furnish and maintain insurance in the form and amounts specified in subparagraphs 1 through 7 inclusive, of this section. Policies shall be with acceptable insurance companies authorized to do business in the State of Ohio.

The Contractor shall not commence Work nor shall he permit any of his Sub-contractors to commence Work until the insurance policies specified hereinafter, or otherwise required, have been submitted to, and approved by the Owner. Such insurance policies shall be kept in force until the Contractor receives final payment.

Insurance shall be endorsed so that it cannot be changed or canceled in less than ten (10) days after receipt by the Contractor and the Owner of written notice of such proposed action from the Insurer.

The insurance specified in Subparagraphs 1, 2, 3 and 4 shall be written under the comprehensive general form of liability insurance contracts.

The Contractor shall furnish three (3) certificates or, whenever specifically requested by the Owner, three (3) certified copies of the insurance policies themselves and a receipt evidencing full payment of the premiums.

In addition to the insurance described hereinafter, the Contractor shall secure and maintain such other insurance as may be designated elsewhere in the Contract document.

If the Contractor is required to repair or perform Work after the completion of the Work involved under this Contract or obtain new policies in accordance with the requirements in this section.

1. *Builders Risk*: In addition to such fire and other physical damage insurance as the Contractor elects to carry for his own protection, he shall also secure and maintain in the name of the Owner, the government agency sponsoring the Project, Subcontractors, the Consulting Engineer and any other parties having an interest in the Project, as named insured as their interest may appear; a builders' risk policy for fire, extended coverage, vandalism and malicious mischief in the amount of one hundred (100) percent of the value of the complete parts of the Project and Materials in storage, except that such coverage shall not be required in connection with sewer, water main or paving construction. Pump or lift station construction shall not be considered sewer or water main construction for purposes of this paragraph.

2. *Workers Compensation*: The Contractor shall provide Workers Compensation Insurance for all employees engaged in Work who may come within the protection of the workers compensation law, and, where applicable, employer's General Liability Insurances for employees not so protected and shall require all Subcontractors to provide corresponding insurance.

The Contractor shall indemnify the Owner and the Consulting Engineer against any and all liabilities, cost and expenses due to accidents or other occurrences covered by the workers compensation law.

3. *Contractor's Motor Vehicle Bodily Injury and Property Damage Liability Insurance:* Insurance to cover liability arising from the use and operation of motor vehicles in connection with the performance of the Contract (as customarily defined in liability insurance policies), whether they be owned, hired or non-owned by the Contractor, as follows:

- a. Bodily Injury Liability: \$500,000 for each person; limit of \$1,000,000 for each occurrence.
- b. Property Damage Liability: \$500,000 for each occurrence.

4. *Contractor's Public Liability and Property Damage Liability Insurance:* Contractor's Public Liability Insurance providing a limit of not less than \$500,000 for all damages arising out of bodily injuries, including accidental death to one person, and a total limit of \$1,000,000 for all damages arising out of bodily injuries, including accidental death, to two or more persons in any one occurrence. Contractor's Property Damage Liability Insurance providing for a limit on not less than \$500,000 for all damages to or destruction of property.

Coverage under this policy shall include, to the limits indicated above, the collapse or damage to any structure, building or its contents, public or private utility, or pavement during construction and for two (2) years thereafter.

Whenever Work under the Contract is to be done in the vicinity of existing underground utilities or structures, coverage under the policy shall also include, to the limits indicated, all damages to said underground utilities or structures during construction and for a period of two (2) years thereafter. Whenever Work under the Contract is to be done by blasting, coverage under the policy shall also include, to the limits indicated above, all damages of any kind whatsoever caused by blasting.

5. *Contractor's Protective Public Liability and Property Damage Liability Insurance:* Contractor's Protective Public Liability and Property Damage Liability Insurance for operations performed by Subcontractors providing for coverage and limits corresponding to those described in subparagraph 4.

6. *Owner's Protective Public Liability and Property Damage Liability Insurance:* Regular Owner's Protective Public Liability and Property Damage Liability Insurance for operations performed by the Contractor or any Sub-contractor providing for coverage and limits corresponding to those described in subparagraph 4.

This policy shall be written in the name of the Owner as a separate policy from those specified elsewhere herein.

7. *Railroad Protective Liability Insurance:* In any of the Work under this Contract is on railroad R/W, the Contractor shall at its sole cost and expense, procure and provide, for and in behalf of each railroad company. Protective Liability Insurance (AARAASHO form) with minimum limits per occurrence of not less than \$2,000,000 for bodily injury, death and/or property damage, subject to an aggregate limit of \$6,000,000 per annum. The policy shall name each railroad company as the insured and be issued to the Contractor. Each railroad company shall be provided with a copy of each policy of insurance prior to commencement of any work.

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Materials Testing

(Required Contract Provision)

In addition to the details included with specific equipment testing in the specifications, include an overall statement regarding testing for the project. Adjust the following language as needed to meet the specifics of the construction project

Testing Services

1. Contractor shall appoint, employ, and pay for specified services of an independent firm to perform testing.
2. The independent firm will perform tests and other services specified in individual specification sections and as required by the Architect/Engineer.
3. Testing and source quality control may occur on or off the project site. Perform offsite testing as required by the Architect/Engineer or the Owner.
4. Reports will be submitted by the independent firm to the Architect/Engineer and Contractor, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
5. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - a. Notify Architect/Engineer and independent firm 24 hours prior to expected time for operations requiring services.
 - b. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
6. Testing does not relieve Contractor to perform Work to contract requirements.
7. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Architect/Engineer. Payment for re-testing will be charged to the Contractor by deducting testing charges from the Contract Sum/Price.

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Continuous Treatment Provisions

(Required Contract Provision)

It is important that construction activities not result in any temporary violations of NPDES permit requirements (for permitted facilities) and construction activities should interrupt wastewater service to the individual resident as little as possible. For drinking water projects, it is important that construction activities not result in any disruption of service. Any disruption of service must be immediately reported to the Ohio EPA, Drinking Water Section of the appropriate district office.

The following example language is a sample of what might be appropriate for construction work occurring at an existing wastewater treatment plant. The language actually incorporated into the contract documents must be adjusted to meet the specifics of the construction project.

Continuous Treatment (wastewater projects)

Federal regulations prohibit by-passing of any sewage during construction operations. The Contractor will be responsible for providing any required temporary pumping facilities piping, etc., necessary to complete the project without any plant by-passing and continuous treatment must be provided at the same level during construction as existed prior to construction.

Unless otherwise previously or subsequently specified, the Contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of his Contract.

The Contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work required to complete their Contract.

The following example language is a sample of what might be appropriate for construction work occurring at an existing drinking water treatment plant. The language actually incorporated into the contract documents must be adjusted to meet the specifics of the construction project.

Continuous Treatment (drinking water projects)

The Contractor will be responsible for obtaining approval from Ohio EPA for use of temporary pumping facilities, piping and other items in order to complete the project without any plant by-passing. Continuous treatment must be provided at the same level during construction as existed prior to construction.

Unless otherwise previously or subsequently specified, the Contractor shall procure and pay for all permits, licenses, and approvals necessary for the execution of his Contract.

The Contractor shall comply with all laws, ordinances, rules, orders, and regulations relating to the performance of the work required to complete their Contract.

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

State of Ohio
 WATER POLLUTION CONTROL LOAN FUND (WPCLF) /
 WATER SUPPLY REVOLVING LOAN ACCOUNT (WSRLA)

CONTRACT CHANGE ORDER

RECIPIENT _____ CHANGE ORDER NBR _____

LOAN NUMBER _____ CONTRACT _____

OWDA PROJECT No. _____ DATE _____

Description of Change:

The time provided for completion in the contract for the above items is (increased/decreased) by ____ calendar days.

RECOMMENDED BY: _____ DATE: _____
 (Engineer)

APPROVED BY: _____ DATE: _____
 (Recipient)

ACCEPTED BY: _____ DATE: _____
 (Contractor)

 (Company)

Original Contract Amt		
Previous Changes (+ / --)		
This Change (+ / --)		
Adjusted Contract Amt		

OWDA APPROVAL
 The above proposal is hereby accepted and I recommend that it be approved and made a part of the contract noted above. The approval does not constitute an increase in the total loan amount, but represents approval for the work.

Ohio EPA Acceptance	Chief Engineer
Date	Date

CHANGE ORDER INSTRUCTIONS:

All Change Orders for this work, regardless of costs and whether Water Pollution Control Loan Fund (WPCLF) or Water Supply Revolving Loan Account (WSRLA) funding will be used to finance the changes, must be submitted to Ohio EPA for review.

Changes Requiring Prior Approval

Any change which substantially modifies the Project Facilities as specified in the Ohio EPA approved Facilities Plan and Final Permit to Install or Final Plan Approval (when applicable) or alters the direct or indirect impact of the Project Facilities upon the environment must be incorporated into a Change Order. One copy of the Change Order prior to execution is to be submitted to Ohio EPA for review and prior approval of the acceptability of the change. "Prior to execution" means before the Change Order is signed by the Owner.

Ohio EPA will review the Change Order and inform the Owner of the technical, environmental and operational acceptability of the change, and give the Owner permission to proceed with the proposed work.

All Other Changes

Change Orders not requiring prior approval as described above must be submitted to Ohio EPA within one (1) month of the time at which they are approved by the Owner. All change orders must be submitted electronically to dedicated change order email addresses for WPCLF and WSRLA projects.

Change Order Approval Process

After the Change Order is executed, one (1) copy of the Change Order, including the supporting documentation, is to be sent electronically to Ohio EPA for final review.

The dedicated e-mail address for the electronic submittal of WPCLF Change Orders is EPAWPCLFCO@epa.ohio.gov.

The dedicated e-mail address for the electronic submittal of WSRLA Change Orders is EPAWSRLACO@epa.ohio.gov.

After the Change Order is accepted and eligible costs determined, Ohio EPA will issue a letter informing the Owner and authorizing OWDA to disburse funds from Project Contingency for the work. The OEPA letter will be sent electronically along with a PDF of the WPCLF/WSRLA Change Order form which will be signed by all parties including Ohio EPA and OWDA.

Payments for Change Order Work

The Owner is precluded from submitting to the OWDA payment requests for Eligible Project Costs associated with the Change Orders until such time as the Ohio EPA's approval of the Change Orders has been obtained.

Local Protest Procedure (suggested contract provision)

Some statement as to when a valid protest must be filed, in what form it must be filed and who it must be filed with should be included. ORC 153.12 has some default procedures for handling WPCLF and disputes. If the owner wants more control than provided in ORC, a procedure needs to be spelled out in the Contract Documents.

The following example language is a sample of language that could be included. Review all local procedures and requirements and adjust the language to meet the specifics of the project.

Protests

A protest based upon an alleged violation of the procurement requirement may be filed against the OWNER's procurement action by a party with an adversely affected direct financial interest. The protest shall be filed with the Mayor. The OWNER shall determine the protest. The OWNER may request additional information or a hearing in order to resolve the protest.

A protest shall be filed as early as possible during the procurement process, but must be received by the OWNER no later than one week after the basis of the protest is known or should have been known, whichever is earlier. If the protest is mailed, the protester bears the risk of nondelivery with in the required time period.

A protest must clearly present the procurement requirement being protested, the facts which support the protest, and any other information necessary to support the protest.

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Basis And Method For Award

(suggested contract
provision)

The contract documents should include some language that clearly states what the Owner will consider when determining the successful bidder and to provide a clear basis for the Owner when they have a need to reject the low bidder and go with a different bidder.

The following example language is a sample of language that could be included. Review all local procedures and requirements and adjust the language to meet the specifics of the project.

Basis for Award

1. Owner reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the successful Bidder, and the right to disregard all nonconforming, nonresponsive or conditional bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
2. In evaluating Bids, Owners shall consider the qualifications of the Bidder, whether or not the Bids comply with the prescribed requirements and alternates and unit prices if requested in the Bid forms. The Owner intends to accept alternates (if any are accepted) in the order in which they are listed in the Bid Form but Owner may accept them in any order or combination.
3. Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principle items of material or equipment) proposed for those portions of the work as to which the identity of Subcontractors and other persons and organizations must submitted as provided in the Supplementary Conditions. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.
4. Owner may conduct investigations he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors, and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time.
5. Owner reserves the right to reject the Bid of any Bidder who does not pass investigation of evaluation to Owner's satisfaction. Owner may reject any Proposal where the unit price or individual lump sum prices are unbalanced and/or unfavorable to the Owner's interest.
6. Owner will not make any award or permit any award at any tier to any party which is debarred or suspended or is otherwise excluded from or ineligible for participation in Federal assistance programs under Executive Order 12549 "Debarment and Suspension." Each Contractor and supplier (over \$25,000) shall complete the Certification Regarding Debarment, Suspension, and Other Responsibility Matters.
7. If Contract is awarded, it will be awarded to the lowest responsive responsible Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interest of the Project.
8. If the contract is awarded, Owner will give the Successful Bidder a Notice of Award within the time stated in the Advertisement after the day of the Bid opening.

9. When owner gives a Notice of Award to the Successful Bidder, it will be accompanied by at least three unsigned counterparts of the Agreement and three copies of all other Contract Documents. Within ten days thereafter, Contractor shall sign and deliver at least three counterparts of the Agreement to Owner with three copies of all other Contract Documents attached. Within fifteen days thereafter, Owner will deliver one copy of all fully signed counterparts to Contractor.

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Payment Methods

(suggested contract provision)

To minimize uncertainty and arguments that can slow down the progress of construction it is useful to provide language stating how and when the Contractor will get paid. In addition to ORC and other local requirements, the involvement of public funding Agencies such as the WPCLF, Ohio Public Works Commission and Community Development Block Grant impact the process and timing for payments.

The following example language is a sample of language that could be included. Review all local procedures and requirements and adjust the language to meet the specifics of the project.

1. At least ten (10) days before each progress payment falls due (but not more often than once a month), the Contractor will submit to the Engineer a partial payment estimated filled out and signed by the Contractor covering the work performed during the period covered by the partial payment estimate and supported by such data as the Engineer may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitable stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the Owner as will establish the Owner's title to the material and equipment and protect his interest therein, including applicable insurance. The Engineer will, with ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the Owner, or return the partial payment estimate to the Contractor indicating in writing his reason for refusing to approve payment.

In the latter case, the Contractor may make the necessary corrections and resubmit the partial payment estimate. The Owner will, within 30 days of presentation to him of an approved partial payment estimate, pay Contractor for labor performed and material incorporated in the Work, at the rate of 92 percent of the amount of the estimate as approved by the Engineer until 50 percent of the Work is completed. All labor performed and material incorporated in the Work after the job is 50 percent of completed shall be paid for at the rate of 100 percent of the amount of additional labor and material furnished and approved and the amount labor and material furnished and approved the amount previously retained shall be deposited in an escrow account. The funds in the escrow account with accumulated interest are to be paid the Contractor at the same time and in the same manner as specified for payment of the of the retained amount in Section 5.

Payment for material and equipment delivered and not incorporated shall be based on the scheduled of quantities and cost submitted. Any money due from Owner shall, on the day that it is due, be paid to Contractor, or deposited in an escrow account, whichever is applicable, with one or more banks or building and loan associations in the state selected by mutual agreement between the Contractor and the Owner. The agreement shall contain the following provisions:

- A. The money shall be deposited in a savings account or the escrow agent shall properly invest the entire escrow principal in obligations selected by the escrow agent, as stipulated in the agreement.
- B. The escrow agent shall hold the escrow principal and income until receipt of notice from the Owner and the Contractor, of until receipt of an arbitration order specifying the amount of escrow principal to be released and the person to whom it is to be released. Upon receipt of the notice or order, the agent shall properly pay such amount of principal and the portion of amount of the escrow income to the person indicated.

- C. The escrow agent shall be compensated for its services as agreed to by the Owner and the Contractor from the income from the escrow account.
2. The request for payment may also include an allowance for the cost of such major material and equipment which are suitably stored either at the site or the near the site.

NOTE: THE CONTRACT LANGUAGE SAMPLES PROVIDED HEREIN ARE EXAMPLES OF WHAT COULD BE INCLUDED IN ALL CONTRACTS THAT USE WPCLF OR WSRLA FUNDS. OHIO EPA MAKES NO CLAIMS REGARDING THE LEGALITY OF THESE CLAUSES WITH RESPECT TO STATE OR LOCAL LAW. IT IS IMPERATIVE THAT ANY PARTY INSERTING THESE CLAUSES INTO A CONTRACT VERIFY THAT THEY ARE LEGAL AND ENFORCEABLE ACCORDING TO STATE AND LOCAL LAWS, REGULATIONS, AND ORDINANCES.

Prohibition on Telecommunications and Video Surveillance

§ 200.216 Prohibition on certain telecommunications and video surveillance services or equipment.

- (a) Recipients and subrecipients are prohibited from obligating or expending loan or grant funds to:
- (1) Procure or obtain;
 - (2) Extend or renew a contract to procure or obtain; or
 - (3) Enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in [Public Law 115–232](#), section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities).
 - (i) For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
 - (ii) Telecommunications or video surveillance services provided by such entities or using such equipment.
 - (iii) Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.
- (b) In implementing the prohibition under [Public Law 115–232](#), section 889, subsection (f), paragraph (1), heads of executive agencies administering loan, grant, or subsidy programs shall prioritize available funding and technical support to assist affected businesses, institutions and organizations as is reasonably necessary for those affected entities to transition from covered communications equipment and services, to procure replacement equipment and services, and to ensure that communications service to users and customers is sustained.
- (c) See [Public Law 115–232](#), section 889 for additional information.
- (d) See also [§ 200.471](#).

Resources:

[2 CRF 200.216](#)

FAQ's: [Sec. 889 of 2019 NDAA FAQ_20201124.pdf \(performance.gov\)](#)

[Public Law 115-232, Section 889](#)

[§ 200.471](#)

WPCLF/WSRLA CONTRACT DOCUMENTS REVIEW

Funding Applicant:	
Project Name:	Project Number:
Date Bid Advertisement will start:	Date Bids will be opened:
Engineer's estimate of construction cost:	
Time of completion for work (e.g., 9 months):	

Please provide the Section/Page number from the contract documents that corresponds with each item below.

Program Requirements -Any item checked as "No" must be explained on a separate sheet

- Yes No EEO Certification Section/Page # _____
- Yes No Certification Regarding Debarment & Suspension Section/Page # _____
- Yes No Prohibition on telecommunications and video surveillance equipment Section/Page # _____
- Yes No Contract provisions describing DBE requirements Section/Page # _____
- Yes No DBE Forms 6100-3, 6100-4 and 6100- 2 Section/Page # _____
- Yes No Davis-Bacon wage rate requirements Section/Page # _____
- Yes No Build America, Buy America Acknowledgement Form Section/Page # _____
- Yes No American Iron and Steel Acknowledgement Form Section/Page # _____
- Yes No BIL Signage Requirement Section/Page # _____
- Yes No Violating Facilities clause Section/Page # _____
- Yes No Small Businesses in Rural Areas (SBRA) Section/Page # _____
- Yes No Insurance for both the contractor and all subcontractors: Section/Page # _____
 - Yes No Workers' Compensation Yes No Vehicle Liability
 - Yes No Public Liability Yes No Flood (if appropriate)
 - Yes No Property Damage Yes No Builders Risk (can be held by owner instead)
- Yes No Material Testing (statement regarding testing for specifications) Section/Page # _____
- Yes No Project-specific continuous service/treatment provisions Section/Page # _____
- Yes No WPCLF/WSRLA Change Order form & instructions Section/Page # _____
- Yes No Bid proposal forms (necessary for determining loan eligibility) Section/Page # _____

Other Contract Requirements

- N/A - superseded by local requirements
- Yes No Text of the bid advertisement Section/Page # _____
- Yes No Engineer's estimate of cost for construction Section/Page # _____
- Yes No Description of how the bid price, including any alternates, is determined Section/Page # _____
- Yes No Notice to Proceed form Section/Page # _____
- Yes No Any material or equipment designated from a "sole source?" Section/Page # _____
If yes, attach a description and justification for each item.
- Yes No Bid includes a dedicated contract contingency/allowance amount Section/Page # _____
Contract contingency is a fixed dollar amount a fixed percentage of the contract total

Ohio Revised Code Requirements - The following are required for municipalities (cities, villages, counties, sewer districts) but may be superseded by local charter or other local requirements.

- N/A - superseded by local requirements N/A - not a municipality
- Yes No Bid Guarantee in the form required by ORC Section/Page # _____
- Yes No Payment and Performance Bonds in the form required by ORC Section/Page # _____
- Yes No Provisions for payment retention in conformance with ORC Section/Page # _____
- Yes No A specific time for completion of the work Section/Page # _____

Checklist Prepared by: _____

Phone or E-mail _____

Bid Package Submittals

The following documents must be submitted to Ohio EPA – DEFA within one week after bids are received, or sooner dependent on your individual project schedule.

1. One copy of all addenda when they are issued.
2. A complete copy of the successful bidder's proposal(s).
3. A bid tabulation (a list of all bidders and their line item amounts) in the same format as the proposal.
4. The engineer's bid evaluation and recommendation.
5. A signed copy of the Contractor's EEO Certification Form
6. A signed copy of the Certification Regarding Debarment, Suspension, and Other Responsibility Matters.
7. Completed copies of Form 6100-3 Individual DBE Subcontractor Proposed Performance Form and Form 6100-4 DBE Subcontractor Utilization Summary that were provided by the successful bidder(s), as well as any alternate "good faith efforts" documentation.
8. A resolution from the loan recipient's governing body tentatively awarding the contract to the successful bidder.
9. A copy of the site title opinion stating that all sites, easements and / or right-of-way necessary to construct the project have been acquired.
10. Signed Build America, Buy America Acknowledgement Form, if applicable.
11. Signed American Iron and Steel Acknowledgement Form.
12. Useful Life Worksheet (must be completed for loan requests greater than 20 years)
 - WPCLF Useful Life Worksheet: <https://epa.ohio.gov/static/Portals/29/documents/ofa/CW-Useful-Life-Worksheet.xlsx?ver=2019-10-31-153519-907>
 - WSRLA Useful Life Worksheet: <https://epa.ohio.gov/static/Portals/29/documents/ofa/DW-Useful-Life-Worksheet.xlsx?ver=2019-10-31-153519-907>



AECOM
1300 East Ninth Street
Cleveland, OH 44114
aecom.com

Project name:
Overbrook Pump Station Design

Project ref:
60332065

From:
Erik J. Bogen, P.E.
Makarand S. Jakate, P.E.

Date:
March 15, 2024

To:
Kathy McKillips, P.E.
City of Elyria

CC:
Steve Benton, P.E. (AECOM)
Bob Budzilek, P.E. (AECOM)

Memo

Subject: Overbrook Pump Station Geotechnical Investigation

The following memorandum presents the results of the geotechnical investigation performed in support of the design and construction of the Overbrook Pump Station in Elyria, Ohio.

Project Understanding

The site for this project is located in the City of Elyria, Ohio along the northern spur of Overbrook Road. The entire project is located within the right-of-way of Overbrook Road between the intersection with the southern spur of Overbrook Road and the intersection with Gulf Road. The total project alignment length is 1155.5 ft.

The proposed improvements for this project include three major sanitary sewer components:

- 1) **Pump Station** – The proposed sanitary sewer pump station will be located within the grass-covered triangle at the intersection of the northern and southern spurs of Overbrook Road (Lat./Long.: 41.3861, -82.0982). The proposed pump station will be located at Sta. 0+20 of the project alignment with a manhole rim elevation of 685.80 ft (NAVD88) and an outlet invert elevation of 679.18 ft (NAVD88).
- 2) **Force Main** – The proposed sanitary sewer force main will consist of a 4-inch diameter pipe connecting the proposed pump station to the existing sanitary sewer manhole (SAN MH 1) at project station 2+85.8. Flow will run uphill from southwest to northeast. Total length of the force main will be approximately 266 ft with an upward slope of approximately 6.5%. Invert depth below existing grade along the proposed force main ranged from approximately 6 ft to approximately 10 ft.
- 3) **Gravity Sewer** – The remainder of the proposed sewer improvements includes construction of a new 10-inch diameter gravity sewer starting at the existing SAN MH 1 and connecting with an additional four existing manholes (SAN MH 2 through SAN MH 5), terminating at SAN MH 5. The total length of the proposed gravity sewer will be approximately 870 ft with invert elevations ranging from 696.57 ft (NAVD88) at SAN MH 1 to 692.71 ft (NAVD88) at SAN MH 5. Invert depth below existing grade along the proposed gravity sewer ranges from 6 ft at SAN MH 1 to 12 ft at SAN MH 5.

Field Exploration

The field exploration portion of this geotechnical investigation included 2 geotechnical borings numbered TB-01 and TB-02. The soil boring locations, depths, and elevations are summarized in **Table 1** below:

Drilling and Sampling

Table 1. Geotechnical Boring Summary

Boring No.	Date Drilled	Latitude (deg)	Longitude (deg)	Prop. Sewer CL Station/Offset	Approx. Surface Elevation (ft NAVD88)	Depth (ft)
TB-01	2/24/2023	41.386532	-82.095427	8+42, 8' LT	704.5	25.0
TB-02	2/24/2023	41.386082	-82.098207	0+08, 10' LT	684.8	24.0

All borings were drilled by AECOM's subcontractor, Ohio TestBor, Inc. using a Mobile B-57 truck-mounted drill rig and 3.25-inch inner-diameter hollow-stem augers. Prior to the start of drilling, boring locations were marked in the field and the Ohio Utility Protection Service (OUPS) was notified in accordance with state regulations.

All borings were drilled within paved roadways, and the pavement was cored using 8-inch diameter pavement core barrels prior to the start of soil drilling and sampling. Standard penetration test (SPT) samples were collected at intervals of 2.5 ft in the upper 10 ft of each boring and at intervals of 5.0 ft thereafter. The SPT samples were collected using a 140-lb. automatic hammer falling 30 inches each blow. This automatic hammer was calibrated on January 6, 2023 with a resulting energy ratio of 91.0%.

Following completion of drilling each soil boring was backfilled with soil cuttings. Boring TB-01 within the existing roadway as patched at the surface with cold-patch asphalt.

Summary of Findings

The subsurface conditions encountered in the field exploration are summarized in the following sections. Detailed boring logs fully documenting each soil boring are included in **Appendix A**.

Surficial Materials

Boring TB-1 was drilled within the existing pavement of Overbrook Drive. The existing pavement encountered at that location consisted of 12 inches of asphalt with a 3-inch thick gravel base. Boring TB-2 was drilled within the grassy area at the location of the proposed pump station. The surface at that location was covered with grass and 12 inches of topsoil.

Fill

A thin layer of fill soil was encountered immediately below the topsoil in boring TB-2. The fill material consisted of silty clay (USCS type CL-ML) and was 1.3 ft thick, extending to a depth of 2.3 ft below existing grade. The single energy-corrected SPT N_{60} value taken within the fill soil was 5 blows per foot, indicating a generally medium stiff consistency.

Glacial Till

Fine-grained glacial till soils were encountered at both boring locations immediately below the fill material and gravel base. The glacial till soils consist predominantly of lean clay (USCS type CL). The glacial till also contained shale fragments, gravel, and cobbles. Energy-corrected SPT N_{60} values within the glacial till materials ranged from 8 to 65 blows per foot (bpf) with an average around 31 bpf indicating a generally medium stiff to very hard consistency, with a hard consistency on average.

Bedrock

Bedrock was encountered in boring TB-2 at a depth of 8 ft below existing grade (elevation 677 ft NAVD88). The bedrock consists of severely to moderately weathered red shale with trace amounts of dark gray staining. Energy-corrected N_{60} values within the red shale bedrock ranged from 32 to 152 bpf with an average around 58 bpf.

Groundwater

Free groundwater was not encountered in either of the two soil borings at the time of drilling. It should be noted that since the borings were open for only a short time, water levels in the boreholes likely did not have sufficient time to equalize with the surrounding water table. Additionally, groundwater levels should be expected to vary with seasonal fluctuations and variations in precipitation. Therefore, the water levels encountered or not encountered in the borings should be considered approximate and should be expected to vary during construction.

Recommendations

Pump Station Foundation

Based on the draft project plans provided by the design team (dated December 15, 2023), the base of the pump station structure is anticipated to be around 678 ft NAVD88. It is recommended that the pump station foundations be supported on shallow spread footings bearing on very stiff lean clay glacial till soils or the weathered red shale bedrock encountered around elevation 677 ft (NAVD88). An allowable net bearing capacity of 4,000 pounds per square foot (psf) may be used for design of a foundation so configured. Assuming a maximum bearing pressure of 4,000 psf, settlement of the red weathered shale is anticipated to be minimal (less than 1 inch total and less than 1/2 inch differential).

Excavation and Engineered Fill

Based on current plans, the new sanitary sewers and pump station will be installed using an open trench method, which will require excavations ranging in depth from 6 to 15 ft. The consistencies of the onsite soils should allow excavation with a moderate size hydraulic excavator or backhoe. The overburden soils within this segment may be considered OSHA Type B materials, while bedrock may be considered OSHA Type A material. Based on the bedrock encountered in the soil borings, excavation of bedrock is not anticipated to be required. Excavation walls are anticipated to be able to be supported during construction by conventional trench boxes and/or benching.

Subsurface soils at the bedding level of the new sewer will likely consist of stiff to very stiff, native cohesive lean clay till soils. These soils are considered to be capable of supporting the new sewer. Granular imported soil consisting of crushed limestone similar to ODOT 57 material may be used for pipe bedding if unsuitable, poor, soft soils are encountered at the bedding level. Soil materials removed from excavations along the sewer may be considered for use as trench backfill above the zone of pipe bedding. Pipe backfill material above the pipe zone can consist of granular backfill material similar to ODOT 304 material in off-road areas, lawn and landscaping areas. Pipe backfill proposed under existing/ future roadway and pavement areas can consist of ODOT 304 granular material, especially in the upper 5 feet immediately beneath proposed subgrades as specified on the Drawings. Compaction of backfill materials should be in accordance with project Drawings and Specifications.

Groundwater Management

Minor to moderate groundwater infiltration should be expected throughout most of the alignment, particularly within the fill soils and the weathered bedrock layers. Groundwater infiltration is generally anticipated to be manageable by sumps and pumping.

Limitations

This geotechnical investigation was performed in accordance with the standard of care commonly used as state-of-practice in our profession. Specifically, our services have been performed in accordance with generally accepted principles and practices of the geological and geotechnical engineering profession. This warranty is in lieu of all other warranties, either express or implied. The conclusions presented in this report are professional opinions based on the indicated project criteria and data available at the time this report was prepared.

The conclusions presented in this report are intended only for the purpose, site location, and project indicated. The recommendations made in this report are based on the assumption that the subsurface soil, rock, and groundwater conditions do not deviate appreciably from those disclosed in the site-specific exploratory borings. If any variations or undesirable conditions are encountered during construction, we should be notified so that additional recommendations can be made, if necessary. AECOM should be informed of any changes that are made in the assumptions described in this memo (such as the location, configuration of the proposed structures, and design loads) so that additional recommendations may be provided.

Appendix A

Soil Boring Logs

Project: Elyria Overbrook Sewer

Project Location: Elyria, OH

Project Number: 60332065

Log of Boring TB-1

Sheet 1 of 1

Date(s) Drilled	2/24/23	Logged By	E. Bogen	Checked By	M. Jakate
Drilling Method	Hollow-stem Auger	Drill Bit Size/Type	3.25" ID	Total Depth of Borehole	25.0' bgs
Drill Rig Type	Mobile B-57 Truck-mount	Drilling Contractor	Ohio Testbor, Inc.	Surface Elevation	704.0 ft above msl
Borehole Backfill	Cuttings, patched with asphalt at surface	Sampling Method(s)	SPT	Hammer Data	ER=91%
		Groundwater Level(s)	Not encountered at time of drilling		

Report: GEO_CR; File C:\USERS\RIELLE.GOLDSTEIN\ONE\DRIVE - AECOM DIRECTORY\DOCUMENTS\ELYRIA OVERBROOK SEWER.GPJ; 3/8/2023 12:35:40 PM

Elevation, feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	Water Content, %	REMARKS AND OTHER DETAILS
		Type	Number	Sampling Resist. Blows/6" OR CORE% RQD	Recovery, %	Pocket Penetrometer (tsf)				
704.0	0						12" ASPHALT	0.0		
703.0							3" GRAVEL BASE	1.0		
702.83		SS-1	2	2	11		Medium stiff, moist, gray with brown mottling, lean CLAY (CL) with sand	1.3		
			3	6						
700.5	5	SS-2	3	8	89		Very stiff, moist, brown, lean CLAY (CL) with gravel and sand	3.5		
			6							
			8							
			10				becomes very stiff with shale fragments			
		SS-3	4	7	100					
			10							
			11				becomes brownish gray with trace orange mottling			
695	10	SS-4	4	8	100					
			11							
			15				becomes hard			
690	15	SS-5	6	11	100					
			15							
			17.5				@17.5' 3" cobble encountered			
			18				@18' cobble encountered			
685.5	20	SS-6	11	20	100		Very hard, damp, gray, sandy lean CLAY (CL) with gravel and shale fragments	18.5		
			23							
			24							
685	25	SS-7	10	15	100					
			24							
680									Rig down pressure ~300 psi	
679.0	25						End of Boring at 25' bgs	25.0		

Project: Elyria Overbrook Sewer

Project Location: Elyria, OH

Project Number: 60332065

Log of Boring TB-2

Sheet 1 of 1

Date(s) Drilled	2/24/23	Logged By	E. Bogen	Checked By	M. Jakate
Drilling Method	Hollow-stem Auger	Drill Bit Size/Type	3.25" ID	Total Depth of Borehole	24.0' bgs
Drill Rig Type	Mobile B-57 Truck-mount	Drilling Contractor	Ohio Testbor, Inc.	Surface Elevation	685.0 ft above msl
Borehole Backfill	Cuttings	Sampling Method(s)	SPT	Hammer Data	ER=91%
		Groundwater Level(s)	Not encountered at time of drilling		

Report: GEO_CR; File C:\USERS\RIELLE.GOLDSTEIN\ONE\DRIVE - AECOM\DIRECTOR\DOCUMENTS\ELYRIA OVERBROOK SEWER.GPJ; 3/8/2023 12:35:45 PM

Elevation, feet	Depth, feet	SAMPLES					Graphic Log	MATERIAL DESCRIPTION	Water Content, %	REMARKS AND OTHER DETAILS
		Type	Number	Sampling Resist. Blows/6" OR CORE% RQD	Recovery, %	Pocket Penetrometer (tsf)				
685	0						685.0 12" TOPSOIL	0.0		
		SS-1	1	2	100		684.0 Medium stiff, moist, brown, sandy, silty CLAY (CL-ML) [FILL]	1.0		
			2				682.7 Medium stiff, moist, light brown, lean CLAY (CL)	2.3		
		SS-2	4	2	11		becomes reddish brown and stiff @3.7' .15" gravel fragment encountered			
680	5		4				679.5 Very stiff, moist, red, lean CLAY (CL) with completely weathered shale fragments	5.5		
		SS-3	5	3	100		677.0 SHALE: Severely weathered, red, with trace dark gray staining	8.0		
		SS-4	11	7	100					
675	10									
		SS-5	18	12	100		becomes highly weathered			
670	15									
		SS-6	39	17	100		becomes highly to moderately weathered			
665	20									
		SS-7	50	50	100		becomes moderately weathered			
660							661.0 End of Boring at 24' bgs	24.0		

SECTION 01 10 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 LOCATION OF WORK:

- A. The work of this Contract is located in the City of Elyria, Ohio, along Overbrook Road.

1.02 SCOPE OF WORK:

- A. This project includes the replacement of 853 linear foot of 8-inch sanitary sewer with 10-inch sanitary sewer from the forcemain discharge to the interceptor on Gulf Road. A new lift station, including back-up power, will be installed to compensate the under capacity of the existing lift station. A new 270 linear foot 4-inch forcemain will be installed to convey flow to the new 10-inch gravity main. An existing 880 LF 4-inch forcemain will be upsized to 6-inch.
- B. This project is being performed as a requirement under a Consent Decree with the U.S.EPA and Ohio EPA. A copy of the consent decree can be found on the City's website at [https://www.cityofelyria.org/wp-content/uploads/2023/03/Elyria Consent Decree Effective 1.10.2023.pdf](https://www.cityofelyria.org/wp-content/uploads/2023/03/Elyria%20Consent%20Decree%20Effective%201.10.2023.pdf)
- C. Contractor shall furnish all labor, equipment, supplies, and supervision of labors necessary to complete the work as shown on the contract drawings and specified herein.
- D. The Work includes, but is not necessarily limited to, the following major items along the project location:
 - 1. Utility and storm sewer removal, replacement and upgrades
 - 2. Roadway pavement, curb, drive apron and sidewalk replacement
 - 3. Tree lawn restoration
 - 4. Maintenance of traffic
 - 5. Storm Water Pollution Prevention

1.03 WORK BY OTHERS:

- A. Refer to Article 7 of the General Conditions for additional requirements.

1.04 WORK SEQUENCE:

1.05 CONTRACTOR'S USE OF PREMISES:

- A. Contractor shall limit the use of the premises for the performance of the Work.
- B. Contractor shall coordinate with Owner necessary access for normal maintenance requirements.
- C. Contractor shall assume full responsibility for security of all his and his subcontractors' materials and equipment stored on the site.
- D. If directed by the Owner, Contractor shall move any stored items which interfere with operations of Owner.
- E. Contractor shall maintain access for plant employees to all equipment during performance of the Work.

1.06 SAFETY:

- A. Contractor is responsible for safety of personnel and plant staff during Contract period.
- B. Provide all devices, materials and equipment necessary to assure safety and health of personnel and plant staff.
- C. Comply with requirements of agencies having jurisdiction including confined space entry requirements. Various work areas at the plant are classified as confined spaces and appropriate measures shall be taken to perform work in these areas.

END OF SECTION

SECTION 01 14 14

CONTROL OF WORK

PART 1 - GENERAL

1.01 PLANT AND HOURS OF CONSTRUCTION:

- A. Furnish equipment which will be efficient and appropriate to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the Contract Time. If at any time such equipment appears to the Engineer to be inefficient, inappropriate, or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character, or increase the plant equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.
- B. Working hour limits for the project shall be from 7 AM to 8 PM seven days a week. Contractor may request approval of alternate hours of work through the City Engineer.

1.02 OCCUPYING PRIVATE LAND:

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

1.03 PIPE LOCATIONS:

- A. Piping is indicated exactly on the Drawings. Piping shall be arranged in a neat, compact, and workmanlike manner, with a minimum of crossing and interlacing, so as not to interfere with equipment or access ways, and, in general, without diagonal runs.

1.04 DIMENSION OF EXISTING STRUCTURES

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

1.05 OPEN EXCAVATIONS:

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, fencing, caution signs, lights, and other means to prevent accidents to persons and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen.

Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer.

- B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be well lighted at night.

1.06 CARE AND PROTECTION OF PROPERTY:

- A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Engineer.

1.07 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES:

- A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to buildings, utilities in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operations shall be repaired by him at his expense.
- B. Assistance will be given the Contractor in determining the location of existing services. Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.
- C. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the Unit Prices Bid in the Bid Form.

1.08 COOPERATION WITHIN THIS CONTRACT:

- A. All firms or persons authorized to perform any work under this Contract shall cooperate with General Contractor and his Subcontractors or trades, and shall assist in incorporating the work of other trades where necessary or required.
- B. Cutting and patching, drilling and fitting shall be carried out where required by the trade or subcontractor having jurisdiction, unless otherwise indicated herein or directed by the Engineer.

1.09 CLEANUP AND DISPOSAL:

- A. During the course of the work, the Contractor shall keep the site of his operations in as clean and as neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the work, he shall remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures, and any other refuse remaining from the construction operations, and shall leave the entire site of the work in a neat and orderly condition.
- B. In order to prevent environmental pollution arising from the construction activities related to the performance of this Contract, the Contractor and his subcontractors shall comply with all applicable Federal, State, and local laws, and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and elsewhere in the Specifications.
- C. The Contractor is advised that the disposal of excess excavated material in wetlands, stream corridors, and plains is strictly prohibited even if the permission of the property owner is obtained. Any violation of this restriction by the Contractor or any person employed by him, will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. Therefore, the Contractor will be required to remove the fill at his own expense and restore the area impacted.

1.10 DUST CONTROL

- A. During the course of the work, the Contractor shall protect all existing equipment from dust created by the Work. The Contractor will be required to maintain all work areas free from dust which cause hazards to local residents, equipment, or personnel.
- B. The Contractor shall submit dust control measures to the Engineer prior to any demolition, sandblasting or other work that will create dust.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 01 29 01

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. CONTRACTOR shall furnish all labor, materials, tools equipment, appurtenances, and all services, including documentation, O&M Manuals, training, and start-up services necessary to perform all work required, at the lump sum or unit prices bid for the Pay Items listed herein.
- B. Detailed breakdown of lump sum bid items as requested by the Engineer, project coordination and scheduling, assistance required by the Engineer to verify compliance with the contract documents, including measuring for final pay quantities, providing miscellaneous temporary or accessory works, verification of existing utility locations and material types, CONTRACTOR'S field office, protection and/or replacement of existing property, sanitary requirements, testing, safety devices, approval drawings, water supplies, power, removal of waste, bonds, insurance, and all other requirements of the Contract Documents. Compensation for all such services, things and materials shall be included in the prices stipulated for the lump sum and unit price Pay Items as identified in the Contract.

1.02 BASIS FOR AWARD

- A. Award of the contract shall be based on meeting or exceeding the minimum experience and performance requirements specified in the Bid Documents and the lowest price of the Base Bid at the OWNER's discretion.

1.03 BASE BID: PRICES TO INCLUDE

Bid Item No. 1 – Mobilization / Demobilization (5.0% Max.) – The lump sum price bid for this item shall include the preparatory work and operations for assembling equipment, supplies, personnel, and incidentals to the project site, including but not limited to Performance Bond and Labor & Material Bonds. This item shall also include the cost to provide an area for staging and storage of materials, sanitation needs for workers, preconstruction video, miscellaneous site clearing, including but not limited to removal of concrete drive aprons and gravel areas which are not be replaced and restoring project area to its original condition at the project completion. This item shall also consist of all preparatory work necessary for the project including field verification of all measurements shown on the plans.

The lump sum price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications. This bid item shall also cover maintenance of flow in any sanitary sewer impacted by construction activities. By-pass pumping will be required during daily operations where the existing sanitary sewer is to

be removed and replaced. At the end of each work day, the existing and new sewer shall be temporarily tied back together as necessary to maintain flow without the use of pumps. If pumps are to be used to maintain flow during now working hours, then the contractor is responsible to provide full time over-sight to verify that the pumps are operating and flow is being maintained.

Contractor shall be paid seventy-five (75%) percent of the lump sum price for Bid Item No. 1, less retainage, after coordinating with City of Elyria WWPCP, mobilizing equipment to the work area and approval of pre-construction documentation. Contractor shall be paid the remaining twenty-five (25%) percent of the lump sum price for Bid Item No. 1, less retainage, after demobilization from the site. The cost of Bid Item No. 01 shall not exceed five (5) percent of the total contract price.

Unit of Measurement: Lump Sum, LS

Bid Item No. 2 – Stormwater Pollution Prevention – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, testing, clearing, dewatering and appurtenances necessary to provide Storm Water Pollution Prevention as shown on the contract drawings including storm inlet protection, tree protection fencing, silt fence and filter sock, daily street sweeping of surrounding roadways or more often as and general good housekeeping practices. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Lump Sum, LS

Bid Item No. 3 – Replace 8-inch Sanitary with 10- inch PVC Sanitary – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, testing, clearing, trenching, imported premium aggregate backfill, removal of spoils, compaction, dewatering and appurtenances necessary to provide and install the Polyvinyl Chloride Pipe (PVC) as indicated in the plans and specifications. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications. Measured from center of MH to center of MH.

Unit of Measurement: Linear Foot, LF

Bid Item No. 4 – New 8-inch Sanitary at Pump station – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, testing, clearing, trenching, imported premium aggregate backfill, removal of spoils, compaction, dewatering and appurtenances necessary to provide and install the Polyvinyl Chloride Pipe (PVC) as indicated in the plans and specifications. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications. Measured from center of MH to center of MH.

Unit of Measurement: Linear Foot, LF

Bid Item No. 5 – New Manholes – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, testing, clearing, trenching,

imported premium aggregate backfill, removal of spoils, compaction, dewatering and appurtenances necessary to provide and install sanitary manholes as indicated in the plans and specifications. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Each Unit, EA

Bid Item No. 6 – New 4-inch PVC Forcemain – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, testing, clearing, trenching, imported premium aggregate backfill, removal of spoils, compaction, dewatering and appurtenances necessary to provide and install the new 4-inch PVC forcemain as indicated in the plans and specifications. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications. Measured from center of MH to center of MH.

Unit of Measurement: Linear Foot, LF

Bid Item No. 7 – Lift Station – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, testing, clearing, trenching, imported premium aggregate backfill, removal of spoils, compaction, dewatering and appurtenances necessary to provide and install one lift station as detailed in the plans and specifications. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Lump Sum, LS

Bid Item No. 8 – Replace Existing 4-inch Forcemain with 6-inch Forcemain – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, testing, clearing, trenching, imported premium aggregate backfill, removal of spoils, compaction, dewatering and appurtenances necessary to provide and install the forcemain as indicated in the plans and specifications. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications. Measured from center of MH to center of MH or to edge of diversion structure.

Unit of Measurement: Linear Foot, LF

Bid Item No. 9 – By-Pass Pumping – Method of Measurement – The lump sum price for this item shall include all materials, labor, equipment, and appurtenances necessary to provide by-pass pumping during the removal and replacement of the existing sanitary sewer. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Lump Sum, LS

Bid Item No. 10 – Electrical Connection to Pump Station and Backup Generator – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, testing, clearing, trenching, imported premium aggregate

backfill, removal of spoils, compaction, dewatering and appurtenances necessary to provide and install electrical connection to the new lift station, back-up power generator, and connection of gas service to the back-up generator. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Lump Sum, LS

Bid Item No. 11 – Full Depth Pavement Removal and Replacement – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, appurtenances, removal of spoils and necessary compaction and proof-rolling of the pavement’s aggregate base course. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Square Yards, SY

Bid Item No. 12 – Pavement Repair – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, appurtenances, removal of spoils. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Square Yards, SY

Bid Item No. 13 – Concrete Repair – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment, appurtenances, removal of spoils and necessary compaction aggregate base course. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Square Yards, SY

Bid Item No. 14 – Site Work – Method of Measurement – The unit price bid for this item shall include furnishing all materials, labor, equipment and appurtenances necessary remove the trees and to perform the seeding and restoration as indicated in the plans and specifications. The unit price bid shall also include the requirements stipulated in the General Conditions and Division 1 of the specifications.

Unit of Measurement: Lump Sum, LS

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 01 32 17

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. CONTRACTOR shall prepare and submit to Engineer for review within 10 days after Notice to Commence Work, a construction progress schedule.

1.02 FORM OF SCHEDULES:

- A. Prepare schedules in form of a horizontal bar chart.
 - 1. Provide separate horizontal bar for each trade or operation.
 - 2. Horizontal Time Scale: Identify first work day of each week.
 - 3. Scale and spacing to allow space for notations and future revisions.
- B. Format of Listings: Chronological order of start of each item of work.
- C. Identification of Listings: By major specification section numbers.

1.03 CONTENT OF SCHEDULES:

- A. Construction Progress Schedule:
 - 1. Show complete sequence of construction by activity.
 - 2. Show dates for beginning and completion of each major element of construction and installation dates for major items of equipment. Elements shall include, but not be limited to, the following:
 - a. Shop drawing receipt from supplier/manufacturer submitted to ENGINEER, review and return to supplier/manufacturer.
 - b. Material and equipment order, manufacturer, delivery, installation, and checkout.
 - c. Performance tests and supervisory services activity.
 - d. Piping, duct work, and wiring installation.

- e. Construction of various facilities.
 - f. Subcontractor's items of work.
 - g. Final cleanup.
 - h. Allowance for inclement weather.
 - i. Demolition.
3. Show projected percentage of completion for each item as of first day of each month.

1.04 SCHEDULE REVISIONS:

- A. Every 30 days CONTRACTOR shall revise construction schedule to reflect changes in progress of work and submit the revised schedule to engineer on monthly basis.
- B. Indicate progress of each activity at date of submittal.
- C. Show changes occurring since previous submittal of schedule.
 - 1. Major changes in scope.
 - 2. Activities modified since previous submittal.
 - 3. Revised projections of progress and completion.
 - 4. Other identifiable changes.
- D. Provide a narrative report as needed to define:
 - 1. Problem areas, anticipated delays, and impact on schedule.
 - 2. Corrective action recommended and its effect.
 - 3. Effect of changes on schedules of other CONTRACTORS.

1.05 SUBMITTAL REQUIREMENTS:

- A. For initial submittal of construction schedule and subsequent revisions thereof, furnish six copies of schedule to ENGINEER.

END OF SECTION

SECTION 01 32 31

PRE & POST-CONSTRUCTION INSPECTIONS

PART 1 - GENERAL

1.01 SUMMARY:

- A. The Work in this Section includes requirements of the CONTRACTOR to perform pre and post-construction inspections for existing structures, houses, buildings, sewers, subsurface utilities, roads, structures, fences, and surface features and other facilities as described herein.
- B. The coverage of inspection shall accurately document the existing conditions within the zone of influence of the proposed construction as described herein.
- C. Methods of documentation include photographs, video, and reports as described herein.
- D. This Section does not cover acceptance and/or inspection of new Work.
- E. This Specification also includes the requirement of the CONTRACTOR to investigate, adjust and resolve third party claims due to damage allegedly caused by the CONTRACTOR'S activities.

1.02 QUALIFICATIONS

- A. Color audio-video taping shall be compiled by a professional photographer actively engaged in color audio-video tape recordings of similar type projects for municipal agencies. The names of the companies and additional requested information shall be submitted to the OWNER for approval prior to engaging the companies proposed to perform the pre-construction videotaping. Submit qualifications of the professional photographer to OWNER for review within 15 days of Notice to Proceed.
- B. CCTV inspections shall be performed by CCTV inspector having a minimum of three years of experience in such work necessary to successfully meet this specification. CCTV inspector shall also provide references for five sewer inspection projects involving remote CCTV pan and tilt inspection and two project references involving walk-through inspection of sewers larger than 48-inch in diameter.

1.03 SUBMITTALS

- A. The CONTRACTOR shall submit pre- and post-construction and third party property claims Inspection Documentation Reports as described herein.
- B. Video and photographs shall be accompanied by a notarized statement verifying the original unedited quality of the media.

- C. Identification: Identify each photograph with label or image caption on the front side, lower left corner with the date taken, project name and location, orientation, and description of view.
- D. Video Logs: Displayed on the storage case of each video shall be a log of the contents. The log shall describe the various segments of coverage contained within the video in terms of the names and sides of the streets or easements, coverage beginning and end points, directions of coverage, and video counter numbers.
 - 1. A cumulative alphabetical index correlating the various segments of coverage to their corresponding video shall be supplied to the OWNER.
- E. Digital files shall be organized according to the following convention:
 - 1. Site/Date/Filename.jpg
 - a. Folder Level 1 – Site
 - b. Folder Level 2 – Subject
 - c. Folder Level 3 – Date: YYYY.MM.DD folder name format
- F. Preliminary Submittals
 - 1. At least 30 days prior to construction submit qualifications of proposed videographer and CCTV inspector for OWNER’s approval.
 - 2. At least 30 days prior to construction submit a sample video of a route similar to this project to verify video and audio quality. When approved, this video will be the standard on which quality will be based and judged.
 - 3. At least 30 days prior to construction submit sample construction photographs of three different projects to verify image quality. When approved, these photographs will be the standard on which quality will be based and judged.
 - 4. At least 30 days prior to construction submit planned format and outline of a typical report.
- G. Preconstruction Documentation:
 - 1. The CONTRACTOR shall prepare and deliver to the OWNER 30 days prior to the start of construction at each site, three (3) bound copies of each of the pre-construction inspections containing:
 - a. Submittal index detailing contents and extent of coverage
 - b. Field notes taken,
 - c. Sketches and diagrams prepared,

- d. CDs of image digital files obtained,
- e. DVDs of video surveys recorded,
- f. Pre-con field survey
- g. Descriptions and reports, signed and witnessed by those taking part in the inspection.

H. Progress Documentation:

- 1. If documentation is required for an inspection resulting from a damage complaint, three (3) copies of data obtained by the CONTRACTOR from each inspection shall be promptly delivered to the OWNER within three days of re-inspection.

I. Inspection Documentation Report:

- 1. The report shall include:
 - a. Location and description of site;
 - b. Results of visual inspection;
 - c. Color video and photographs;
 - d. Sketches;
 - e. Interview of Property Owner regarding existing conditions and structural faults, with dates and extent of recent repairs.
 - f. Points where deterioration has occurred shall be noted and color photographs taken on all sides of the buildings and structures (interior and exterior) to show existing condition and any deterioration or other deficiencies.
 - g. The absence of deficiencies shall also be recorded.
 - h. The age of each structure, trees, shrubs, utilities, pavement and other details pertinent to the replacement of each item should be documented.
 - i. Field surveys:
 - (1) Field surveys shall be performed by the Contractor's approved, surveyor, licensed in the State of Ohio. Perform field surveys as required to supplement Contract Documents and to establish pre-construction baseline elevations and post-construction or progress surveys to be used in the assessment of structural or property damage. The minimum requirements shall be as follows:
 - (a) Corners of buildings or structure foundations.

- (b) The location of each elevation shall be fully described in words and located on a survey plan to be included in the report.
2. The reports for each of the structures shall be signed by the CONTRACTOR's Representative that was present during the examination of each property. The OWNER shall examine said reports and may indicate additional information that is required.
3. Maintain a separate file on each property owner in the construction area. The file shall include a record of the property owner's permission to access the property.

PART 2- PRODUCTS

2.01 EQUIPMENT:

- A. Only high-quality video and photographs will be considered acceptable during the initial submittals to develop the project standard. It is the CONTRACTOR's responsibility to maintain, repair, replace, and/or update the equipment such that the quality standard is achieved throughout the project duration.
- B. Photographs
 1. Digital photographs shall contain a minimum of ten million pixels.
- C. Video
 1. Video recordings shall be in high-definition and shall, by electronic means display continuously and simultaneously generated, transparent, alpha-numeric information to include the following:
 - a. Video Tape Index Number
 - b. Project Title
 - c. General Project Location:
 2. Each video tape shall begin with a single, multi-line alpha-numeric display indicating the video tape index number, project title, and general location of the project.
 3. Time and Date: During the entire duration of the recordings, the time and date.
 4. Camera Position: During the entire duration of the recordings, the position of the camera, accurately referenced and displayed in terms of the construction's engineering stationing or coordinates, shall be displayed (in standard stationing format) in the lower left hand corner of the picture. Where no stationing or coordinates appear on the Contract Documents, an appropriate system acceptable to the OWNER, shall be established and utilized.

2.02 TELEVISION CAMERA FOR REMOTE CCTV AND MONITOR

- A. The camera(s) shall be operative in 100 percent humidity/submerged conditions. The CCTV camera equipment will provide a view of the pipe ahead of the equipment and of features to the side and rear of the equipment through turning and rotation of the lens. The camera shall be capable of tilting at right angles along the axis of the pipe while panning the camera lens through a full circle about the circumference of the pipe. The lights on the camera shall also be capable of panning 90-degrees to the axis of the pipe. If the equipment proves to be unsatisfactory, it shall be replaced with adequate equipment. The camera unit shall have sufficient quantities of line and video cable to inspect sewers with access as far apart as 2,500 feet.
- B. The television camera, electronic systems and monitor shall provide an image that meets the following specifications:
 - 1. The gray scale shall show equal changes in brightness ranging from black to white with a minimum of five stages.
 - 2. With the monitor control correctly adjusted, the six colors - Yellow, Cyan, Green, Magenta, Red, and Blue, plus black and white shall be clearly resolved with the primary colors in order of decreasing luminance. The gray scale shall appear in contrasting shades of gray with no color tint.
 - 3. The picture shall show no convergence or divergence over the whole of the picture. The monitor shall be at least 13 inches diagonally across the picture tube.
 - 4. The live picture on the CCTV monitor shall be capable of registering a minimum of 500 lines horizontal resolution and be a clear, stable image with no interference.
- C. Lighting intensity shall be remote controlled and shall be adjusted to minimize reflective glare. Lighting and camera quality shall provide a clear, in-focus picture of the entire inside periphery of the sewers and laterals for conditions except submergence. Under ideal conditions (no fog in the sewer) the camera lighting shall allow a clear picture up to five pipe diameter lengths away for the entire periphery of the sewer. The lighting shall provide uniform light free from shadows or hot spots.
- D. Camera focal distance shall be remotely adjustable through a range of 6 inches to infinity.
- E. The monitor and software shall also be able to capture and save screen images of typical sewer details and defects.

2.03 WALK-THROUGH INSPECTION CAMERA

- A. The walkthrough inspection unit shall be equipped with sufficient quantities of line, two-way communication cable, and video coax cable to inspect sewer with access as far as 2,500 ft apart. Special video amplifiers and portable, industrial-grade color video

cameras shall be employed, as required, to transmit the video signal from the in-sewer inspection crew to the aboveground inspection unit.

- B. Professional grade CCTV cameras specifically adapted for large diameter sewers (up to 175 inch) shall be used to film sewer interiors. It shall be operative in 100 percent humidity conditions and shall be capable of producing a full-color picture of a minimum of six linear feet of the entire periphery of the sewer. The camera lens shall have not less than a 65-degree viewing angle. The camera shall have a minimum resolution of 320 lines. Focal distance shall be adjustable through a range of six inches to infinity.
- C. Lighting shall be sufficient for color video inspection of sewers 48-inch in height and larger. To confirm picture quality throughout conditions encountered during the investigation, a variable intensity control of the camera lights and either automatic or remote control adjustments for focus and iris shall be located at the monitoring station.
- D. A digital or 35-mm camera shall also be carried by the walkthrough inspection crew and used to photograph typical sewer details and defects. Photographs shall be submitted on CD-R's in digital format.

2.04 VIDEO REQUIREMENTS

- A. Video:
 - 1. Video recordings shall be in high-definition and shall, by electronic means, display continuously and simultaneously generated, transparent, and alpha-numeric information to include the following:
 - a. Video Disk Index Number
 - b. Project Title
 - c. General Project Location:
 - 2. Each video disk shall begin with a single, multi-line alpha-numeric display indicating the video disk index number, project title, and general location of the project.
 - 3. Time and Date: During the entire duration of the recordings, the time and date.
- B. Camera Position: During the entire duration of the recordings, the position of the camera, accurately referenced and displayed in terms of the construction's engineering stationing, shall be displayed (in standard stationing format) in the lower left hand corner of the picture. Where no stationing appears on the Contract Documents, an appropriate stationing system acceptable to OWNER, shall be established and utilized.

2.05 CCTV VIDEO RECORDINGS

- A. The video and audio recordings of the sewer inspections shall be made using digital video equipment. Super-VHS recordings shall be converted to individual digital movie files (.mpeg, .mpg – one file for each reach inspection) for submission on CD-R's or DVDs. A video enhancer may be used in conjunction with, but not in lieu of, the required equipment. The digital recording equipment shall capture sewer inspection on CD-R or DVD disks, with each sewer reach inspection recorded as an individual movie file (.mpeg, .mpg).
- B. The audio portion of the composite video shall be sufficiently free from electrical interference and background noise to provide complete intelligibility of the oral report. Audio shall be recorded by the operating technician on the inspection video as the sewer is inspected and shall include the sewer location, identification of beginning and terminating manholes including location (address or cross streets), inspection direction, length of inspection, side sewer identification, flow information, complete descriptions of the sewer line conditions as they are encountered, description of the rehabilitation work, reason for termination, and other relevant commentary to the inspections. In addition, the audio reports shall include the distance traveled on the specific run, a description of abnormal conditions in the sewer and side sewer connections as they are encountered, explanations for pausing, backing up, or stopping the survey, and the final measured center to center distances between consecutive manholes. Audio dubbing after the inspection is prohibited.
- C. The reaches shall be documented on the video in sequential order, from upstream to downstream, wherever possible. The images recorded on the CCTV video shall be the same images that are required to be displayed on the CCTV monitor.
- D. The equipment used for the inspection shall provide for simultaneous monitoring of the in-sewer inspection by OWNER. Equipment that does not allow for out of sewer observation of the inspection will not be allowed.
- E. The inspection videos shall be digitally indexed at significant defects, and the site coding sheets shall be filled out at these same intervals. Index numbers shall be included in the inspection logs.
- F. Typed labels shall be attached to the face of each CD or DVD, or videotape cassette. The typed index labels shall include the following information:
 - 1. Content (CCTV).
 - 2. CONTRACTOR name.
 - 3. Type of survey (CCTV).
 - 4. Sewer name.
 - 5. Reaches included (from Manhole Number ## to Manhole Number ##).

6. Date of survey.
 7. Work order number (if applicable).
- G. A 5-second blank space shall be inserted at the beginning of the tape and between sewer sections in order to more clearly mark the end of one televised sewer section and the beginning or another.

PART 3- EXECUTION

3.01 RESPONSIBILITIES:

- A. Nothing contained herein shall relieve the CONTRACTOR of responsibility for claims arising alleged to arise from its construction operations. Failure to inspect a structure, whether or not required by these Contract Documents, or inadequacy of the inspections shall not relieve the CONTRACTOR of its responsibility. The CONTRACTOR shall indemnify the OWNER and the ENGINEER from such claims.
- B. Re-Inspections
1. The CONTRACTOR shall also be responsible for re-inspection as often as necessary in the opinion of the OWNER to verify the adequacy of his construction methods for prevention of damage and to obtain sufficient evidence to adjust and resolve claims for damage from third parties.
 2. CONTRACTOR shall also inspect and/or re-inspect homes where homeowners claim that damage is occurring as a result of the CONTRACTOR'S blasting and/or construction operations.

3.02 COLOR AUDIO-VIDEO TAPING

- A. Coverage Continuity: In order to reduce the number of recording edits and increase the continuity of the coverage, the coverage shall not consist of a group of recordings at various positions along a proposed construction area, but shall consist of a single, continuous, unedited recording which begins at one end of the particular construction area and continues to the other end of the construction area. However, where coverage is required in areas not accessible by conventional wheeled vehicles and smooth transport of the recording system is not possible, such coverage shall consist of an organized, interrelated sequence of recordings at various positions along that proposed construction area (e.g., wooded easement area).
- B. The subject or purpose of the photograph shall be made obvious to the viewer with techniques such as pointing, a painted arrow, or pane circled around the subject, using bright paint.

- C. Close-up, detailed color photographs shall be taken of cracks, deterioration and other observable effects in the exterior portions of buildings and other property improvements including, but not limited to, retaining walls, driveways and sidewalks.
- D. Camera Height and Stability: When conventional wheeled vehicles are used as conveyances for the recording system, the distance between the camera lens and the ground shall not be less than 8 feet. The camera shall be firmly mounted, such that transport of the camera during the recording process will not cause an unsteady picture.
- E. Camera Control: Camera pan, tilt, zoom-in, and zoom-out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during videodisk playback. In addition, other camera and recording system controls, such as lens focus and aperture, video level, pedestal, chroma, white balance, and electrical focus, shall be properly controlled or adjusted to maximize recorded picture quality.
- F. Viewer Orientation Techniques:
 - 1. The audio and video portions of the recording shall maintain viewer orientation. To this end, overall establishing views and visual displays of visible house and building addresses shall be utilized. In easements where the proposed construction location will not be readily apparent to the video disk viewer, highly visible yellow flags shall be placed in such fashion as to clearly indicate the proposed centerline of construction.
 - 2. Name and Side of Street or Easement: During the entire duration of the recordings, the name and side of the street or easement being recorded shall appear across the bottom of the picture.
 - 3. Buildings: Identified visually by house or building number, when possible, in such a manner that the progress of the taping and the proposed system may be located by reference to the buildings.
 - 4. Audio shall accompany the video recording and shall be a corresponding and simultaneously recorded audio recording. This audio recording, exclusively containing the commentary of the camera operator, shall assist in the maintenance of viewer orientation and in needed identification, differentiation, clarification, or objective descriptive of the structures being shown in the video portion of the recording.

G. Coverage of Taping: The area to be taped shall include, but not be limited to, existing driveways, sidewalks, curbs, ditches, streets, landscaping, trees, culverts, catch basins, headwalls, retaining walls, fences, visible utilities, and buildings located within the zone of influence of construction. Designated haul routes shall be taped. Of particular concern are existing faults, fractures, defects, or other imperfections exhibited by the above mentioned surface features. Audio description shall be made simultaneously with and support the video coverage.

1. Streets shall be recorded by audio-video tape near sites where streets are present and along sides of the streets except where specifically noted otherwise by the OWNER.
2. Easement Areas shall be recorded by audio-video tape for the full width of the permanent and temporary easements and other adjacent areas lying within the zone of influence of construction as directed by OWNER. The size and locations of easements to be taped will be shown on the Contract Documents or otherwise supplied by the OWNER.
3. The CONTRACTOR shall furnish color audio- video tapes of exterior surfaces of buildings specifically identified by the OWNER to receive such coverage. At a minimum, structures or buildings shall be videotaped if located above the work area and within a permanent easement. Buildings so identified may include houses, apartments, factories, warehouses, retail stores and other structures. Exterior building coverage shall include, but not be limited to, walls, visible foundations, chimneys, porches, and trim.
4. Bridges and those areas immediately surrounding and adjacent to bridges appearing on Contract Documents shall be audio-video taped. Exterior bridge supports, structural members, visible footings, side walls, underside, and deck shall receive especial although not exclusive attention. Existing cracks, faults, fractures, defects or other imperfections shall be of particular concern.

H. Location Information

1. DVD's and cases shall be properly identified by disc number, location and project name in a manner acceptable to the OWNER.
2. A brief report and inventory of DVD's completed, referenced by location and DVD number, shall be furnished to the OWNER upon completion of the work and delivery of the DVD's.
3. Video recordings shall begin with the date and time of recording, the project name, the sheet numbers or engineering stationing as shown on the Contract Documents, the name of the street, easement or building being taped, the direction of travel, easement, and the viewing side.

4. Houses and buildings shall be identified visually by house or building number, when possible, in such a manner that the progress of the taping and the proposed system may be located by reference to the houses and buildings.
5. The engineering stationing numbers shall be continuous and correspond to the project sewer stationing and include the standard engineering symbols. This information shall appear in the lower half of the viewing screen. Below the engineering stationing shall appear the name of the project, name of the area covered, direction of travel, viewing side, date, time, etc.

3.03 TIME OF EXECUTION

- A. The CONTRACTOR shall coordinate the inspections with the construction schedule so that those portions of the construction that will be completed first will be recorded first.
- B. The inspections shall be performed prior to the placement of construction materials or equipment on the proposed construction site.
- C. Visibility: Recordings shall be performed during times of good visibility. No recording shall be done during periods of significant precipitation, mist, or fog. The recording shall only be done when sufficient sunlight is present to properly illuminate the subjects of recording and to produce bright, sharp video recordings of those subjects.
- D. Snow: No inspection of site/surface conditions shall be performed when more than 10 percent of the ground area is covered with snow, unless otherwise authorized by the OWNER.

3.04 NOTIFICATION

- A. Dates for pre-construction survey at the site shall be coordinated with the OWNER.
- B. Private Property
 1. When planning on entering private property, the CONTRACTOR shall provide a minimum of 48 hours' notice to the OWNER of such property to obtain access permission prior to entry.
 2. In the event that a property owner denies access for the survey of structures and facilities within the specified limits,
 3. The CONTRACTOR shall immediately notify the OWNER, and then notify such property owner, by certified mail, on the intent of the survey.
 4. If after two weeks, access is still denied, the CONTRACTOR shall notify the property owner once again by certified mail, stating that this is final notification.

5. Submit to the OWNER copies of correspondences between the CONTRACTOR and the property owner(s). The OWNER will obtain the right to enter the property through the legal powers vested in the OWNER as a public entity.
6. The CONTRACTOR is fully responsible for claims and damage arising from his construction operation regardless of being denied access permission from the OWNER.

3.05 CCTV EXECUTION

A. General

1. The CCTV camera shall be positioned as close to the spring line as possible while maintaining the required equipment stability. If the flow levels are above the spring line, then the vertical position of the camera shall be just above the free water surface. CONTRACTOR shall also inspect and document manholes included in this Work. The camera shall pan the periphery of the manhole from casting to invert. If water levels prevent adequate televising of the sewer, then conducting the Work during low flow periods or other methods detailed in the Contract Documents shall be implemented.
2. The speed that the camera or survey unit is conveyed through the sewer while performing general inspections shall be uniform and shall be limited to a maximum of 30-feet per minute. The survey unit shall be slowed, stopped, or backed-up to perform detailed inspections of significant features. The camera shall be stopped at defects, changes in material, water level, size, side connections, manholes, junctions, or other unusual areas. When stopped at the defect or feature, the operator shall pan the camera to the area and along the circumference of the pipe. The operator shall also record audio of the type of defect or feature, clock position, footage, extent or other pertinent data. Still photographs or screen captures shall be taken at defects and at least every 200 feet.
3. Inspections shall be performed in the presence of OWNER.
4. At CONTRACTOR's discretion or direction of OWNER, the camera shall be stopped or backed up (when conditions allow) to view and analyze conditions that appear to be unusual or uncommon for a sound sewer. The lens and lighting shall be readjusted, if need be, in order to verify a clear, distinct, and properly lighted feature.
5. CONTRACTOR shall be responsible for traffic control measures required. Although no residential or commercial traffic is anticipated during the completion of the work, it is likely that random vehicular traffic may be experienced. Such traffic may include landfill associated vehicles and machinery, OWNER maintenance crews and other contractors and material suppliers completing work on this Project. CONTRACTOR shall be responsible for maintaining localized traffic on site during CCTV inspection work.

B. Linear Measurement

1. The CCTV camera location footage counter shall be zeroed at the beginning of each inspection. The survey unit location entered on the footage counter at the start of the inspection shall allow for the distance from the accepted start of the length of the sewer to the initial point of observation of the camera (adjusted zero). In the case of resuming an inspection at an intermediate point within a sewer reach, the footage counter shall be set to start at the distance from the upstream maintenance hole to that point, as previously recorded by the counter. CONTRACTOR shall confirm that the footage counter starts to register immediately when the survey unit starts to move.
2. Prior to commencing inspections, CONTRACTOR shall demonstrate compliance with the linear measurement tolerance specified below:
 - a. The equipment shall measure the location of the camera unit in 1-foot increments from the beginning (upstream end) of each continuous section. This footage location shall be displayed on the CCTV monitor and recorded on the videotapes.
 - b. The accuracy of the measured location shall be within + 0.5% of the actual length of the sewer reach being surveyed, or 1 foot, whichever is greater.

C. CCTV Monitor Display

1. The images displayed on the CCTV monitors will be a view of the pipe above the water surface as seen by the CCTV camera as the unit is conveyed through the sewer.
2. The camera lighting shall be fixed in intensity prior to commencing the survey and the white balance set to the color temperature emitted. In order to verify color constancy, ideally no variation in illumination shall take place during the survey.
3. The video equipment shall be checked using an approved test card with a color bar prior to commencing each day's survey. The camera shall be positioned centrally and parallel to the test card at a distance where the full test card just fills the monitor screen. The card shall be illuminated evenly and uniformly without reflection.

D. Data Displays

1. The CCTV images shall include an initial data display that identifies the sewer reach being surveyed and a survey status display that provides continuously updated information on the location of the survey unit as the survey is being performed. These data displays shall be in alphanumeric form. The size and position of the data shall not interfere with the main subject of the monitor picture.

2. The on-screen display shall be white during inspections where the background behind the display is dark and, conversely, black where the background is light.
3. At the beginning of each reach of sewer being inspected, the following information shall be electronically generated and displayed on the CCTV monitors as well as included in the audio track:
 - a. Date of survey.
 - b. Interceptor name/location.
 - c. Manhole number to manhole number (in order of inspection).
 - d. Direction of survey (upstream or downstream).
 - e. Time of start of survey.
 - f. During inspections, the following information shall be electronically generated, automatically updated, and displayed on the CCTV monitors: survey unit location in the sewer line in feet and tenths of feet from adjusted zero, sewer diameter, and abbreviated manhole reference numbers (upstream and downstream manholes in order of survey direction).

E. Photographs

1. CCTV Inspection

- a. During CCTV inspections, screen captures will be taken from the monitor images and saved electronically by the in-sewer inspection crew of typical conditions every 200 feet and at defects. The screen capture shall have the interceptor name, reach (identified by the upstream and downstream manholes), survey direction, footage, and date when photograph was taken. The annotation shall be clearly visible and in contrast to its background, shall have a figure size no greater than 1/4-inch, and shall be type-printed. The annotation shall be positioned on the front of the photograph so as to not interfere with the subject of the photograph.
- b. The image of the sewer shall fill the photographic image. Photographs shall clearly and accurately show what is displayed on the monitor, which shall be in proper adjustment. Where significant features exist within 6-feet of each other, one photograph shall be made to record these features. Where there is a continuous feature, photographs shall not be taken at intervals of less than 6-feet unless absolutely necessary to show a change in the feature.
- c. The images shall be kept electronically, copied to a CD, and submitted with the inspection videos and logs.

2. Walkthrough Inspection

- a. During walkthrough inspections, digital or 35-mm still color photos will be taken by the in-sewer inspection crew of typical conditions every 200 feet and at defects. The camera used shall be equipped to record the date on film so that it appears on the photograph.
- b. The image of the sewer shall fill the photographic image. Photographs shall clearly and accurately show what is displayed on the monitor, which shall be in proper adjustment. Where significant features exist within 6-feet of each other, one photograph shall be made to record these features. Where there is a continuous feature, photographs shall not be taken at intervals of less than 6-feet unless absolutely necessary to show a change in the feature.
- c. Photographs shall be annotated to clearly identify the interceptor name, reach (identified by the upstream and downstream manholes), survey direction, footage, and date when photograph was taken. The annotation shall be clearly visible and in contrast to its background, shall have a figure size no greater than ¼-inch, and shall be type-printed. The annotation shall be positioned on the front of the photograph so as to not interfere with the subject of the photograph.
- d. For 35-mm photographs the photographic negatives shall be supplied in suitable plastic negative holders and bound in a negative folder. The photographs shall be supplied in suitable plastic photograph holders and bound in the Survey Notebook. An electronic copy of the images shall be burned to a CD and submitted with the inspection videos and logs.

F. MANHOLE NUMBERING, INSPECTION FORMS AND DEFECT CODES

1. CONTRACTOR will be required to use the OWNER's manhole numbering system when performing the inspections for this project, or use manhole/catch basin number for this project if not labeled using the OWNER manhole numbering system. In addition, the OWNER inspection forms and standard defect codes shall be used. The defect codes, inspection forms, and inspection protocols are included in the OWNER's Sewer Defect Identification Manual that will be distributed to CONTRACTOR.

G. POST-SEWER INSPECTIONS

1. Following the sewer work, CONTRACTOR shall conduct a CCTV inspection of the completed work to verify that the sewer work is acceptable. Pipes shall be inspected by personnel entering the pipeline and manually recording conditions as specified herein.
2. The post-sewer CCTV inspections shall be performed throughout the entire pipe reach, manhole to manhole, where sewer work has been performed. The inspection shall document defects encountered and areas that have been

rehabilitated. The camera shall be panned, tilted and rotated at defects and at service lateral connections for a complete video documentation.

3. The post sewer inspections are intended to confirm the condition of the pipes and manholes and to verify the completeness of the sewer installation. OWNER may accompany CONTRACTOR in the pipe during the inspection or may observe the inspection from the television truck. In either case, CONTRACTOR shall take direction from OWNER regarding observations, documentation and measurements required. OWNER shall have the authority to reject any or of the inspection video if it does not comply with these specifications. Those reaches will be re-videoed at no additional cost to OWNER.
4. The camera shall be moved through the sewer in either direction. At points within the sewer showing defects, laterals, and sewer appurtenances, CONTRACTOR shall stop the camera to verify adequate video coverage. Inspection crews shall be in constant communication with each other and OWNER via walkie-talkies or other suitable means during operations.
5. If the camera cannot pass the entire sewer reach from its starting direction, the reach shall be inspected as much as possible from both upstream and downstream directions. Additional lining of the reach shall be performed and the pipe shall be re-inspected until the lining and televising has been accepted by OWNER, at no additional cost to OWNER.
6. If CONTRACTOR equipment becomes stuck in the sewer, CONTRACTOR shall be responsible for costs associated with extracting the equipment from the sewer.
7. Damages to public or private property resulting from CONTRACTOR activities shall be repaired by CONTRACTOR at no cost to OWNER.

H. Report

1. Two copies of the inspection videos saved in mpeg format on CD-R's or DVD, electronic version (.jpg) of still photographs saved on CD-R's or DVD, and hard copies of the inspection logs shall be submitted to OWNER for review and approval. Payment will not be made for sewer work until OWNER has reviewed and approved the post work inspection videos. CONTRACTOR shall submit the videos a minimum of 10 days in advance of payment request to provide OWNER adequate time to review the files.
2. The TV inspection report shall include video recordings, pictures and OWNER standard inspection forms and defect codes. Inspection forms and defect codes can be found in the Sewer Defect Identification Manual. CONTRACTOR shall provide equal documentation on both the videos and forms. CONTRACTOR shall maintain a copy of report material. CONTRACTOR shall provide comments as necessary to fully describe the existing condition of the sewer, both through the voice over on the videos and on the inspection forms. Photographs shall further

document both typical sewer features, and defects. The photographs shall be copied to a CD and submitted to the OWNER along with the videos and logs.

3.06 DOCUMENTATION

- A. The number of pre-construction photographs required will be the amount necessary to document the scope of the work as described herein.
- B. Coverage Continuity
 - 1. In order to reduce the number of recording edits and increase the continuity of the coverage. The coverage shall not consist of a group of recordings at various positions along a proposed construction area, but shall consist of a single, continuous, unedited recording which begins at one end of the particular construction area and continues to the other end of the construction area. However, where coverage is required in areas not accessible by conventional wheeled vehicles and smooth transport of the recording system is not possible, such coverage shall consist of an organized, interrelated sequence of recordings at various positions along that proposed construction area (e.g., wooded easement area).
- C. The subject or purpose of the photograph shall be made obvious to the viewer with techniques such as pointing, a painted arrow, or pane circled around the subject, using bright paint.
- D. Close-up, detailed color photographs shall be taken of cracks, deterioration and other observable effects in the exterior portions of buildings and other property improvements including, but not limited to, retaining walls, driveways and sidewalks.
- E. Camera Height And Stability
 - 1. When conventional wheeled vehicles are used as conveyances for the recording system, the distance between the camera lens and the ground shall not be less than 8 feet. The camera shall be firmly mounted, such that transport of the camera during the recording process will not cause an unsteady picture.
- F. Camera Control
 - 1. Camera pan, tilt, zoom-in, and zoom-out rates shall be sufficiently controlled such that recorded objects will be clearly viewed during videotape playback. In addition, other camera and recording system controls, such as lens focus and aperture, video level, pedestal, chroma, white balance, and electrical focus, shall be properly controlled or adjusted to maximize recorded picture quality.
- G. Viewer Orientation Techniques.
 - 1. The audio and video portions of the recording shall maintain viewer orientation. To this end, overall establishing views and visual displays of visible house and

building addresses shall be utilized. In easements where the proposed construction location will not be readily apparent to the videotape viewer, highly visible yellow flags shall be placed in such fashion as to clearly indicate the proposed centerline of construction.

2. Name and Side of Street or Easement: During the entire duration of the recordings, the name and side of the street or easement being recorded shall appear across the bottom of the picture.
3. Buildings: Identified visually by house or building number, when possible, in such a manner that the progress of the taping and the proposed system may be located by reference to the buildings.
4. Audio shall accompany the video recording and shall be a corresponding and simultaneously recorded audio recording. This audio recording, exclusively containing the commentary of the camera operator, shall assist in the maintenance of viewer orientation and in needed identification, differentiation, clarification, or objective descriptive of the structures being shown in the video portion of the recording.

3.07 SCOPE OF INSPECTION COVERAGE

A. Building Exteriors

1. Furnish tapes of exterior surfaces of buildings either specifically identified by the OWNER or those within the zone of influence of the CONTRACTOR'S operations. Such buildings may include houses, apartments, factories, warehouse, retail stores, and other structures close to the work area. Coverage shall include, but not be limited to, walks, visible foundations, exterior walls, porches, trim, visual external survey of the building or structure, interior basement foundations.

B. Color photographs showing visually evident external structural cracks and damage. Document the location and width of existing cracks in each structure. Install crack monitors selectively where crack width exceeds 1/8-inch if approved by the Property Owner. A photograph shall be taken of each crack monitor installation.

C. Internal video survey shall be conducted for underground sanitary and storm sewer utilities, pipelines, and culverts within the limits and distances specified in this Section. A remotely-controlled and operated robotic camera shall be used for non-man entry sewer diameters.

D. Easements

1. Where construction will extend through easement areas, the permanent and temporary easements and other adjacent areas lying within the construction's zone of influence shall be recorded. The term easement shall be understood to mean areas not defined as streets.

- a. Easements: In easements where hand-held video equipment shall be used and the engineering stationing cannot automatically be reproduced on the tape, local landmarks along the route or other recognizable features off to the side of the sewer route shall be visually and audibly noted at frequent intervals to identify camera location.
- E. Detour & Haul Streets: Where construction traffic will extend to a street the full width of the street right-of-way and the areas adjacent to both sides of that right-of-way shall be recorded. The term street shall be understood to mean a highway, road, street, avenue, boulevard, lane, circle, alley, etc.; and be inclusive of associated catch basins, sidewalks, and curbs.
- F. Visible utilities features including but not limited to power poles, overhead lines and fire hydrants.
- G. Utilities (including underground water, sewer, gas laterals and electric cables etc. for each building or structure),

3.08 ZONE OF INSPECTION COVERAGE

- A. The recordings shall contain coverage of surface features located within the construction's zone of influence. The construction's zone of influence shall be defined as:
 - 1. The area within right-of-ways and easements and adjacent areas which may be affected by routine construction operations within the limits defined below, and
 - 2. Areas directed by OWNER.
- B. CONTRACTOR shall conduct inspections at the following locations for pre- and post-construction inspection, progress documentation, and re-inspection documentation:
 - 1. Blasting: Record conditions within a 500 foot radius from the blast face when projected to the ground surface.
 - 2. Sewer Access Structures: Perform pre-construction inspection for structures, houses, utilities and other facilities located entirely or partially within a 100 foot radius from the center of each excavation.
 - 3. Perform pre-construction inspection for structures, houses, utilities and other facilities located entirely or partially within a 40 foot radius from the centerline of each open-cut excavation.
- C. In addition to the locations identified above, the survey shall extend to areas expected to be disturbed by CONTRACTOR's operations, including but not limited to roadways, pavements, curbs, driveways, sidewalks, culverts, headwalls, retaining walls, buildings, landscaping, trees, shrubbery, and fences. Of particular concern shall be the existence or nonexistence of faults, fractures, or defects.

- D. Conduct internal video recording of pipes to be abandoned at least 45 days prior to the start of abandonment. Provide inspection report to OWNER and identify location and size of connections into the sewer to be abandoned.
- E. Completion
 - 1. Upon completion of excavation, the CONTRACTOR shall make similar examination of properties structures, and conditions where complaints of damage have been received or damage claims have been filed. Give notice to interested parties so that the parties may be present during the final examination. Records of the final examination shall be signed and distributed.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals.
 - 1. Shop Drawings.
 - 2. Product Data.
 - 3. Construction or Submittal Schedules.
- B. Additional general submission requirements are contained in Paragraph 6.17 of the General Conditions.
- C. Detailed submittal requirements will be specified in the technical specifications section.

1.02 SHOP DRAWINGS, PRODUCT DATA, SAMPLES:

- A. Shop Drawings:
 - 1. Shop drawings, as defined in the General Conditions, and as specified in individual work Sections include, but are not necessarily limited to: custom-prepared data such as usage information, coating detail drawings, and test reports including performance curves and certifications as applicable to the work.
 - 2. All shop drawings shall be submitted using the transmittal form furnished by the Engineer.
 - 3. All shop drawings submitted by subcontractors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
 - 4. The Contractor shall check all subcontractor's shop drawings regarding measurements, size of members, materials, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.
 - 5. All details on shop drawings submitted for approval shall show clearly the relation of the various parts of the main members and lines of the structure, and

where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before being submitted for approval.

B. Product Data:

1. Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and printed installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances including certificates of compliance and applicability, catalog cuts, product photographs, printed performance curves, and test reports and certifications, and printed product warranties, as applicable to the Work.

C. Samples:

1. Samples specified in individual Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the Work.

1.03 CONTRACTOR'S RESPONSIBILITIES:

- A. The Contractor shall review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:
 1. Field measurements
 2. Field construction criteria
 3. Catalog numbers and similar data
 4. Conformance with the Specifications
- B. Each shop drawing, sample, and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor: "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 drawings and product data sheets 11-in. X 17-in. and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing

of all items within the package. Provide to the Engineer a copy of each submittal transmittal form for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the Engineer.

- C. If a shop drawing shows any deviation from the requirements of the Contract Documents, the Contractor shall make specific mention of the deviations in the Transmittal Form furnished by the Engineer and provide a description of the deviations in a letter attached to the submittal.
- D. The review and approval of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will not have responsibility therefor.
- E. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.
- F. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.
 - 1. Manufacturer's printed installation instructions, a part of product data submitted to the Engineer will not be reviewed and are for informational purposes only.

1.04 SUBMISSION REQUIREMENTS:

- A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other contractor.
- B. All submittals shall be submitted sufficiently in advance of construction requirements to provide no less than fourteen working days, excluding Saturdays, Sundays and legal holidays for review from the time received at the Engineer's reviewing office. For submittals of major equipment, that require more than fourteen days to review, due to its sheer complexity and amount of detail and also requiring review by more than one engineering discipline, a letter will be sent by the Project Manager or his/her designee to the Contractor informing him/her of the circumstances and the date it is expected the submittal will be returned to the Contractor.
- C. Number of submittals required:
 - 1. Shop Drawings: Unless otherwise stated in the respective Specifications Sections, submit eight (8) hard copies or one (1) electronic copy.

2. Product Data: Unless otherwise stated in the respective Specifications submit eight (8) copies or one (1) electronic copy.
3. Samples: Submit the number stated in the respective Specification Sections.

D. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.
2. The Project title and number.
3. Contractor identification.
4. The names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
5. Identification of the product, with the specification section number, page and paragraph(s).
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the Work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
9. Identification of deviations from Contract Documents.
10. Identification of revisions on resubmittals.
11. An 8-in. X 3-in. blank space for Contractor and Engineer stamps.

E. Each shipment of drawings shall be accompanied by a transmittal form furnished by the Engineer providing a list of the drawing numbers and the names mentioned above.

F. Submittals shall be separated by specification section. Do not combine submittals for different specification sections under the same transmittal.

1.05 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES:

- A. The Engineer's review is for general conformance with the design concept and contract drawings. Markings or comments shall not be construed as relieving the Contractor from compliance with the contract plans and specifications or from departures therefrom. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
- B. The review of shop drawings, data, and samples will be general. They shall not be construed:
 - 1. as permitting any departure from the Contract requirements;
 - 2. as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;
 - 3. as approving departures from details furnished by the Engineer, except as otherwise provided herein.
- C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.
- D. Two (maximum) copies of shop drawings or product data will be returned to the Contractor via First Class United States Postal Service or one (1) electronic copy will be returned via email. Samples will not be returned.
- E. Submittals will be returned to the Contractor under one of the action codes indicated and defined on the transmittal form furnished by the Engineer.
- F. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing, on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the Engineer.
- G. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor, and will be considered "Rejected" until resubmitted. The Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

- H. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least seven working days prior to release for manufacture.
- I. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

1.06 DISTRIBUTION:

- A. Distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. Number of copies shall be as directed by the Engineer but shall not exceed 6.

1.07 GENERAL PROCEDURES FOR SUBMITTALS:

- A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval resubmittal (if required), coordination with other submittals, inspection, testing (off-site and on-site), purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

1.08 CERTIFICATION FORMS:

- A. If specifically required in other Sections of these Specifications, the Contractor shall submit the applicable Certificate of Design for each item required, and in the form attached to this Section, completely filled in and signed and sealed by a registered professional engineer.

1.09 CERTIFICATES OF COMPLIANCE:

- A. Certificates of Compliance as required in the specifications shall include and mean certificates, manufacturer's certificates, certifications, certified copies, letters of certification and certificate of materials.
- B. The Contractor shall be responsible for providing Certificates of Compliance as required in the technical specifications. Certificates are required for demonstrating proof of compliance with specification requirements and shall be executed in 6 copies unless otherwise specified. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Supplier, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or

dates of the tests to which the report applies. Certification shall not be construed as relieving the Supplier from furnishing satisfactory material, if after tests are performed on selected samples, the material is found not to meet the specific requirements.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

CERTIFICATE OF DESIGN

The undersigned hereby certifies that he/she is a Professional Engineer registered in the state of _____ and that he/she has been employed by (Name of Contractor) _____ to design _____ in accordance with Specifications Section _____ for the (Name of Project) _____. The undersigned further certifies that he/she has performed similar designs previously and has performed the design of the _____; that said design is in conformance with all applicable local, state, and federal codes, rules, and regulations and professional practice standards; that his/her signature and Professional Engineer (P.E.) Stamp have been affixed to all calculations and drawings used in, and resulting from, the design; and that the use of that stamp signifies the responsibility of the undersigned for that design.

The undersigned hereby certifies that he/she has Professional Liability Insurance with limits of \$1,000,000.00 and a Certificate of Insurance is attached.

The undersigned hereby agrees to make all original design drawings and calculations available to the Town/City of _____ or Owner's representative within seven (7) days following written request therefore by the Owner.

P.E. Name

Contractor's Name

Signature

Signature

Title

Title

Address

Address

(THIS PAGE INTENTIONALLY LEFT BLANK)

CERTIFICATE OF UNIT RESPONSIBILITY
For Specification Section _____

(Section title)

In accordance with Section 01300, paragraph 1.08 of the contract documents, the undersigned manufacturer accepts unit responsibility for all components of equipment furnished under specification Section _____. We hereby certify that these components are compatible and comprise a functional unit suitable for the specified and indicated performance and design requirements.

Notary Public

Name of Corporation

Commission expiration date

Address

Seal: By: _____
Duly Authorized Official

Legal Title of Official

Date: _____

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 01 35 43

PROTECTION OF ENVIRONMENT

PART 1 - GENERAL

1.01 SCOPE OF WORK:

- A. The work covered by this Section consists of furnishing all labor materials and equipment and performing all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.
- B. The control of environmental pollution requires consideration of air, water, and land, and involves management of noise and solid waste, as well as other pollutants.
- C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching, or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area.
- D. Ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.
- E. Schedule and conduct all work in a manner that will minimize the level of noise escaping the site, especially at night and on weekends.

1.02 APPLICABLE REGULATIONS:

- A. Comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement.
- B. United States Environmental Protection Agency (USEPA):
 - 1. EPA-72-015: Guidelines for Erosion and Sedimentation Control Planning and Implementation
 - 2. EPA 43019-73-007: Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity

1.03 NOTIFICATIONS:

- A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectional acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. The Contractor shall, after receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or his authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.04 IMPLEMENTATION:

- A. Prior to commencement of the work, meet with the Engineer to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.
- B. Remove temporary environmental control features, when approved by the Engineer, and incorporate permanent control features into the project at the earliest practicable time.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 EROSION CONTROL & INLET PROTECTION:

- A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures such as siltation basins, hay check dams, mulching, jute netting, and other equivalent techniques shall be used as appropriate. Offsite surface water shall be diverted around the site to a downstream channel ahead of siltation barriers. Flow of surface water into excavated areas shall be prevented. Ditches around construction area shall also be used to carry away water resulting from dewatering of excavated areas. At the completion of the work, ditches shall be backfilled and the ground surface restored to original condition.
- B. Contractor shall protect catch basins, inlet basins and manhole covers from water runoff generated by Work activities.

3.02 PROTECTION OF STREAMS, WETLANDS, AND SURFACE WATER:

- A. Care shall be taken to prevent or reduce to a minimum any damage to any stream, drainage ditch, storm drain or sewer from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Such water will be diverted through a settling basin or filter before being directed into the streams.
- B. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action drawing or plan approved by the Ohio EPA. Contractor shall submit to copies of approved contingency drawings or plans to the Engineer.

3.03 PROTECTION OF LAND RESOURCES:

- A. Land resources within the project boundaries and outside the limits of permanent work shall be restored to a condition, after completion of project that will appear to be natural and not detract from the appearance of the project.
- B. Outside of areas requiring earthwork for the construction of the new facilities, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.
- C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.
- D. Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition. The Engineer will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of.

All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-in. in diameter shall be coated as soon as possible with an approved tree wound dressing. All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside established clearing limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed and replaced.

- E. The locations of the Contractor's storage, and other construction building, required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared as shown on the Drawings and shall require written approval of the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the Engineer.
- F. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling, and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as approved by the Engineer.
- G. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.04 PROTECTION OF AIR QUALITY:

- A. Burning. The use of burning at the project site for the disposal of refuse and debris will not be permitted.
- B. Dust Control. The Contractor will be required to maintain all demolition sites, excavations, embankments, stockpiles, access roads, plant sites, waste areas, and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded, and which would cause a hazard or nuisance to others.
- C. Comply with local environmental regulations for dust control. If Contractor's dust control measures are considered inadequate by Engineer, Engineer may require Contractor to take additional dust control measures.
- D. An approved method of stabilization consisting of sprinkling or other similar methods will be permitted to control dust. The use of chlorides may be permitted with approval from the Engineer.
- E. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control

shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.05 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION:

- A. During the life of this Contract, maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 01 43 00

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. This section covers Quality Assurance and Control requirements for this contract.
- B. The Contractor is responsible for controlling the quality of work, including work of its subcontractors, and suppliers and for assuring the quality specified in the Technical Specifications is achieved.
- C. Refer to the Article 6 - Contractor's Responsibilities, paragraphs 6.01, 6.02, and 6.03.

1.02 CONTRACTOR FURNISHED TESTING LABORATORY SERVICES:

- A. An independent commercial testing laboratory acceptable to the Engineer shall perform all tests that require the services of a laboratory to determine compliance with the Contract Documents. The laboratory shall be staffed with experienced technicians, properly equipped, and fully qualified to perform the tests in accordance with the specified standards.
- B. Preliminary Testing Services: The Contractor shall be responsible for all testing laboratory services in connection with concrete materials and mix designs, the design of asphalt mixtures, gradation tests for structural and embankment fills, backfill materials, and all other tests and engineering data required for the Engineer's review of materials and equipment proposed to be used in the Work. The Contractor shall obtain the Engineer's acceptance of the testing laboratory before having services performed, and shall pay all costs for services.
- C. The Contractor shall not retain any testing laboratory against which the Owner or the Engineer have reasonable objection, and if at any time during the construction process the services become unacceptable to the Owner, or the Engineer, either the Owner or the Engineer may direct in writing that such services be terminated. The request must be supported with evidence of improper testing or unreasonable delay. If the Engineer determines that sufficient cause exists, the Contractor shall terminate the services and engage a different testing laboratory.
- D. Transmittal of Test Reports: Written reports of testing and engineering data furnished by the Contractor for the Engineer's review of materials and equipment proposed to be used in the Work shall be submitted as specified for Shop Drawings.

- E. The Contractor's testing laboratory shall furnish four copies of a written report of each test performed by laboratory personnel within three days after each test is completed. Distribution shall be two copies of each test report to the Engineer's Representative, one copy to the Owner, and one copy for the Contractor.

1.03 QUALITY ASSURANCE:

- A. Codes and Standards: Refer to Article 3 - Contract Documents: Intent, Amending, Reuse, paragraph 3.03 of the General Conditions.
- B. Copies of applicable referenced standards are not included in the Contract Documents. Where copies of standards are needed by the Contractor for superintendence and quality control of the work, the Contractor shall obtain a copy or copies directly from the publication source and maintain at the jobsite, available to the Contractor's personnel, subcontractors, and Engineer
- C. Quality of Materials: Unless otherwise specified, all materials and equipment furnished for permanent installation in the Work shall conform to applicable standards and specifications and shall be new, unused, and free from defects and imperfections, when installed or otherwise incorporated in the Work. The Contractor shall not use material and equipment for any purpose other than that intended or specified unless the Engineer authorizes such use.
- D. Where so specified, products or workmanship shall also conform to the additional performance requirements included within the Contract Documents to establish a higher or more stringent standard or quality than that required by the referenced standard.

1.04 OFFSITE INSPECTION:

- A. When the specifications require inspection of materials or equipment during the production, manufacturing, or fabricating process, or before shipment, such services shall be performed by the Owner's independent testing laboratory, or inspection organization acceptable to Engineer in conjunction with or by the Engineer.
- B. The Contractor shall give appropriate written notice to the Engineer not less than 30 days before offsite inspection services are required, and shall provide for the producer, manufacturer, or fabricator to furnish safe access and proper facilities and to cooperate with inspecting personnel in the performance of their duties.

1.05 MATERIALS AND EQUIPMENT:

- A. The Contractor shall maintain control over procurement sources to ensure that materials and equipment conform to specified requirements in the Contract Documents.
- B. The Contractor shall comply with manufacturer's printed instructions regarding all facets of materials and/or equipment movement, storage, installation, testing, startup, and

operation. Should circumstances occur where the contract documents are more stringent than the manufacturer's printed instructions, the Contractor shall comply with the specifications. In cases where the manufacturer's printed instructions are more stringent than the contract documents, the Contractor shall advise the Engineer of the disparity and conform to the manufacturer's printed instructions. In either case, the Contractor is to apply the more stringent specification or recommendation, unless approved otherwise by the Engineer.

1.06 SHOP AND FIELD TESTING:

- A. The Contractor is responsible for providing advance notice of and access for the shop and field testing specified in the technical specification sections.
- B. The Contractor and its Subcontractor shall permit inspections, tests, and other services as required by the Contract Documents.
- C. Contractor shall provide twenty one days written notice to the Engineer so that the Engineer may schedule and witness off site and on site tests. The Engineer's witnessing of tests does not relieve the Contractor and/or Subcontractors of their obligation to comply with the requirements of the Contract Documents.

1.07 MANUFACTURER'S FIELD SERVICES:

- A. When specified in the technical specifications sections, the Contractor shall arrange for and provide technical representation from manufacturer's of respective equipment, items or components. The manufacturer's representative shall be a factory trained service engineer/technician with the type and length of experience specified in the technical specifications.
- B. Services Furnished Under This Contract: An experienced, competent, and authorized factory trained service engineer/technician representative of the manufacturer of each item of equipment for which field services are indicated in the specifications shall visit the site of the Work and inspect, operate, test, check, adjust if necessary, and approve the equipment installation. In each case, the manufacturer's service representative shall be present when the equipment is placed in operation. The manufacturer's service representative shall revisit the jobsite as often as necessary until all problems are corrected and the equipment installation and operation are satisfactory to the Engineer.

1.08 CERTIFICATION FORMS AND CERTIFICATES:

- A. The Contractor shall be responsible for submitting the certification forms and certificates in conformance with the requirements specified in Section 01 33 00 - Submittals.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 QUALITY CONTROL:

- A. Quality control is the responsibility of the Contractor, and the Contractor shall maintain control over construction and installation processes to assure compliance with specified requirements.
- B. Certifications for personnel, procedures, and equipment associated with special processes (e.g., welding, cable splicing, instrument calibration, surveying) shall be maintained in the Contractor's field office, available for inspection by the Engineer. Copies shall be made available to the Engineer upon request.
- C. Means and methods of construction and installation processes are the responsibility of the Contractor, and at no time is it the intent of the Engineer to supersede or void that responsibility.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES

PART 1 - GENERAL

1.01 SCOPE OF WORK:

- A. The Contractor shall provide all temporary facilities for the proper completion of the work, as required and as specified.

1.02 SANITARY REGULATIONS:

- A. The Contractor shall provide adequate sanitary facilities for the use of those employed on the Work. Such facilities shall be made available when the first employees arrive on the site of the Work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the Work in suitable numbers and at such points and in such manner as may be required.
- B. The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. He shall rigorously prohibit the committing of nuisances on the site of the Work, on the lands of the Owner, or on adjacent property.

1.03 SMOKING:

- A. Smoking shall be allowed only in designated areas.

1.04 WATER SUPPLY:

- A. For all necessary operations at the site of the work (except as noted in the next paragraph below) the Owner, without charge therefore, shall provide reasonable quantities of water at the then existing pressure from a mutually convenient hydrant of the water distribution system. The Contractor shall furnish all necessary pipe or hose extensions to conduct the water to the points of use and shall exercise due care not to waste water. The Contractor shall not contaminate the water supply and shall comply with all applicable regulations and code requirements.
- B. The Owner reserves the right to limit, suspend, or terminate the supplying of water as set forth above should it consider such action to be necessary on account of damage to the distribution system, the necessity of conserving water, or other emergency. In this event, the Contractor shall obtain water from some other approved source, at his own expense.

1.05 TEMPORARY HEAT:

- A. If temporary heat is required for the protection of the Work, the Contractor shall provide and install suitable heating apparatus, shall provide adequate and proper fuel, and shall maintain heat as required.

1.06 ELECTRICAL ENERGY:

- A. The Contractor shall make all necessary applications and arrangements and pay all fees and charges for electrical energy for power and light necessary for the proper completion of the Work and during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters.
- B. The Contractor shall provide sufficient electric lighting so that all work may be done in a workmanlike manner when there is not sufficient daylight.

1.07 TELEPHONE SERVICE:

- A. The Contractor shall make all necessary applications and arrangements and pay all fees and charges for telephone service required for the temporary facilities for the project.

1.08 PRECAUTIONS DURING ADVERSE WEATHER:

- A. During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the Work may be properly done, satisfactory in all respects. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.
- B. During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by suitable means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

1.09 CONTRACTOR'S FIELD OFFICE:

- A. Field Offices, General: Prefabricated or mobile unit with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. The Contractor shall maintain a temporary field office or other storage facility as needed near the work for his own use during the period of construction at which readily accessible copies of all contract documents shall be kept. The office shall be located where it will not interfere with the progress of the work. In charge of this office there shall be a competent full-time superintendent of the Contractor.

- C. The Contractor shall not occupy space within the wastewater pollution control plant for purposes other than those stipulated for construction. Temporary space shall be provided for contract worker's use during the project.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 01 66 10

DELIVERY, STORAGE AND HANDLING

PART 1 - GENERAL

1.01 GENERAL:

- A. This Section specifies the general requirements for the delivery handling, storage and protection for all items required in the construction of the work. Specific requirements, if any, are specified with the related item.

1.02 TRANSPORTATION AND DELIVERY:

- A. Transport and handle items in accordance with manufacturer's printed instructions.
- B. Schedule delivery to reduce long term on-site storage prior to installation and/or operation. Deliver products to the site in manufacturer's original sealed containers or other packing systems, complete with instructions for handling, storing, unpacking, protecting and installing.
- C. All items delivered to the site shall be unloaded and placed in a manner which will not hamper the Contractor's normal operation or those of subcontractors and other contractors and will not interfere with the flow of necessary traffic.
- D. Provide equipment and personnel to unload all items delivered to the site.
- E. Promptly inspect shipment to assure that products comply with requirements, quantities are correct, and items are undamaged. For items furnished by others (i.e. Owner, other Contractors), perform inspection in the presence of the Engineer. Notify Engineer verbally, and in writing, of any problems.

1.03 STORAGE AND PROTECTION:

- A. Store and protect products and equipment in accordance with the manufacturer's instructions, with seals and labels intact and legible of equipment.
- B. Arrange storage of products and equipment to permit access for inspection. Periodically inspect to make sure products and equipment are undamaged and are maintained under specified conditions.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 01 74 23

CLEANING UP

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

- A. During its progress, the work and the adjacent areas affected thereby shall be cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible. Any dust created in the building created as a result of the work must be cleaned up upon completion of the work.
- B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.
- C. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary works, tools, and machinery or other construction equipment furnished by him; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.
- D. The Contractor shall thoroughly clean all materials and equipment installed by him and his sub-contractors, and on completion of the work shall deliver it undamaged and in fresh and new-appearing condition. All mechanical equipment shall be left fully charged with lubricant and ready for operation.
- E. The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Use only those cleaning materials which will not create hazards to property and persons or damage surfaces of material to be cleaned.
- B. Use only cleaning materials recommended by manufacturer of surface to be cleaned.

PART 3 - EXECUTION

3.01 FINAL CLEANING:

- A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.

END OF SECTION

SECTION 01 77 00
CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SCOPE OF WORK:

- A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:
 - 1. Closeout procedures.
 - 2. Final cleaning.
 - 3. Adjusting.

1.02 RELATED WORK:

- A. Warranties and Bonds are included in Section 01 78 36.

1.03 CLOSEOUT PROCEDURES:

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's inspection.
- B. Provide submittals to Engineer that are required by governing or other authorities.
- C. Submit closeout submittals specified in other Division 01 Sections, including project record documents, final completion photographic documentation, damage or settlement surveys, and similar final record information.
- D. Submit final Application for Payment identifying total adjusted Contract Sum, previous payment, and sum remaining due.

1.04 FINAL CLEANING:

- A. Complete the final cleaning operations in Section 01 74 23 before requesting inspection for Certification of Substantial Completion.

1.05 ADJUSTING:

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 78 36

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 SCOPE OF WORK:

- A. This Section specifies general administrative and procedural requirements for warranties and bonds required by the Contract Documents, including manufacturers' standard warranties on products and special warranties.

1.02 RELATED WORK:

- A. Refer to Conditions of Contract for the general requirements relating to warranties and bonds.
- B. General closeout requirements are included in Section 01 77 00 Contract Closeout.
- C. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Sections of Division 31 through 33.
- D. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.

1.03 SUBMITTALS:

- A. Submit written warranties to the Owner prior to the date fixed by the Engineer for Substantial Completion. If the Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion for the Work, or a designated portion of the Work, submit written warranties upon request of the Owner.
- B. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Owner within fifteen days of completion of that designated portion of the Work.
- C. When a special warranty is required to be executed by the Contractor, or the Contractor and a subcontractor, supplier or manufacturer, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Engineer for approval prior to final execution.

- D. At Final Completion, compile two copies of each required warranty and bond properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- E. Bind warranties and bonds in heavy-duty, commercial quality, durable 3-ring vinyl covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-in. by 11-in. paper.
- F. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification Section in which specified, and the name of the product or work item.
- G. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address and telephone number of the installer, supplier, and manufacturer.
- H. Identify each binder on the front and the spine with the typed or printed title "WARRANTIES AND BONDS," the Project title or name, and the name, address, and telephone numbers of the Contractor and equipment supplier.
- I. When operating and maintenance manuals are required for warranted construction, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.04 WARRANTY REQUIREMENT:

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise

available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights or remedies.

- E. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- F. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.
- G. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.05 DEFINITION:

- A. Standard Product Warranties are pre-printed written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 26 0000

ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes
 1. Raceways
 2. Boxes
 3. Wire and cable
 4. Wiring devices
 5. Grounding
- B. Related Sections
 1. Section 263213, Engine Generator Systems.

1.3 REFERENCES

- A. Unless otherwise stated, references are to the latest edition of the standard.
- B. American Public Works Association (APWA)
 1. Uniform Color Code for Marking Underground Utility Lines
- C. American Society for Testing and Materials (ASTM)
 1. ASTM C33, Standard Specification for Concrete Aggregates.
- D. Institute for Electrical and Electronics Engineers (IEEE)
 1. IEEE C2, National Electrical Safety Code.
- E. National Electrical Manufacturers Association (NEMA)
 1. NEMA RN 1, Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 2. NEMA FB 1, Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable.
 3. NEMA TC 2, Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 4. NEMA C80.1, Specification for Rigid Steel Conduit, Zinc Coated.
 5. NEMA AB 1, Molded Case Circuit Breakers.
 6. NEMA KS 1, Enclosed Switches
 7. NEMA 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 8. NEMA PB1, Panelboards.
- F. National Fire Protection Association (NFPA)
 1. NFPA70, The National Electrical Code.

- G. Underwriter's Laboratory (UL)
 - 1. UL 50, Cabinets and Boxes.
 - 2. UL 98 Enclosed and Dead Front Switches.
 - 3. UL 310, Electrical Quick Connect Terminals.
 - 4. UL 486A-486B, Wire Connectors.
 - 5. UL 486C, Splicing Wire Connectors.
 - 6. UL 1242 and NEMA C80.6 - Intermediate Metal Conduit.
 - 7. UL 1449 3rd Edition 2009 Revision

1.4 DEFINITIONS

- A. Abbreviations
 - 1. AHJ. Authority Having Jurisdiction.
 - 2. AWG. American Wire Gauge.
 - 3. NRTL. Nationally Recognized Testing Laboratory.
 - 4. PWM. Pulse Width Modulated.
 - 5. PVC. Polyvinyl Chloride.
 - 6. SPD. Surge Protective Device.
 - 7. VFD. Variable Frequency Drive.
- B. Wet locations. The following are defined as wet locations:
 - 1. All exterior locations.
 - 2. All interior locations below grade.
 - 3. All interior locations where wet materials are processed, pumped, transported, or stored.
- C. Hazardous (classified) locations. The following are defined as hazardous (classified) locations.
 - 1. All hazardous (classified) locations and their hazard classification are shown on the drawings.

1.5 SUBMITTALS

- A. General
 - 1. Comply with the requirements of Section 013300, Submittal Procedures.
 - 2. Submit information as described below.
 - 3. Provide all information needed to determine compliance with the plans and specifications.
- B. Product Data
 - 1. Manufacturer's technical product data sheets for all products specified in this section.
 - 2. Delete or cross out all inappropriate or non-applicable information.
- C. Shop Drawings
 - 1. Materials list. Submit a list with quantities, manufacturer's name, and catalog numbers.
 - 2. Dimensional drawings. Submit dimensional drawings for all products.
 - 3. Mounting details.
 - 4. Wiring diagrams: Submit wiring diagrams for all products.
 - a. Show all components and features specified.
 - b. Differentiate between factory and field installed wiring and components.
- D. Quality Control Submittals
 - 1. Test Reports

- a. Factory test report. Submit results of the required factory test prior to shipment.
 - b. Field test report. Submit certified copies of the field test reports.
2. Training data.

E. Contract Closeout Submittals

1. Project record documents.
2. Operation and maintenance (O&M) data
 - a. Submit O&M manual prior to delivery of the products.
 - b. Include instructions on start-up, operation, and maintenance.
 - c. Include a complete parts list and a recommended spare parts list.

1.6 QUALITY ASSURANCE

A. Regulatory requirements: Comply with the following:

1. All applicable federal, state, and local codes and regulatory requirements.
2. National Electrical Code (NEC).

1.7 DELIVERY, STORAGE, AND HANDLING

A. General: Comply with Division 1 Product Requirements Sections.

B. Packing and shipping

1. Package equipment as required to prevent damage during shipment.
2. Mount heavy items on pallets or skids to facilitate handling.

C. Storage and protection

1. Store the products until they can be installed.
2. Meet the storage requirements of the manufacturer.

1.8 SEQUENCING AND SCHEDULING

A. Sequence and coordinate equipment installations for efficient flow of the work.

B. Place equipment in service as required to maintain the facility in operation and to allow further construction to proceed.

PART 2 - PRODUCTS

2.1 PRODUCT REQUIREMENTS – GENERAL

A. General

1. Provide new and unused products of current manufacture.
2. Provide products free from defects affecting performance.
3. All units of the same type must be from the same manufacturer.

B. Listing and labeling

1. Provide UL listed and labeled products.
2. Provide a service equipment label on all switches and circuit breakers used as a service disconnecting means.

2.2 BASIC ELECTRICAL MATERIALS

A. Raceways

1. Rigid aluminum conduit. Rigid aluminum conduit, threaded type, ANSI C80.5, UL6A.
2. Rigid nonmetallic conduit. Polyvinyl chloride (PVC), schedule 40, NEMA TC-2, UL 651.
3. Liquid-tight flexible nonmetallic conduit. Continuous hard PVC spiral encapsulated with flexible PVC, UL 1660.
4. Conduit fittings
 - a. Conduit bodies. Threaded aluminum, UL 514B.
 - b. Conduit hub assemblies. Cast metal, ribbed body with female threads, o-ring gasket, integral conduit nipple with insulated throat, grounding type locknut, UL 514B.
 - c. Rigid nonmetallic. PVC, molded solvent welded, NEMA TC 3.
 - d. Liquid-tight flexible nonmetallic. PVC, one piece body, compression ferrule, sealing gland and gasket.
5. Explosion-proof seals. Rated use in class I, division 1, group D atmosphere.
6. Mechanical conduit seals.
 - a. Neoprene sealing gasket, two stainless steel pressure discs, and three stainless steel socket head cap screws.
 - b. Sized to fit interior of conduit.
 - c. Pressure discs and gasket factory drilled to match size and number of cables.
 - d. Rated to withstand 50 pounds per square inch gauge (psig) water or gas pressure.
7. Watertight wireways. NEMA 4X, watertight, corrosion resistant stainless steel with hinged cover and gasket, screw clamps, and flanged joints with gaskets.

B. Boxes

1. Outlet and device boxes.
 - a. Cast aluminum with integral threaded conduit entrances.
 - b. Cast aluminum cover with gasket, receptacle covers weatherproof in use.
2. Pull and junction boxes.
 - a. Sheet metal, type 316 stainless steel, welded seams, rated NEMA 4X.
 - b. Hinged door with seamless gasket.
 - c. Stainless steel cover clamps on all four sides.
3. Underground pull boxes
 - a. Factory-fabricated fiberglass-reinforced polymer concrete, stackable.
 - b. Minimum size of 17 inches W x 30 inches L x 12 inches D.
 - c. Heavy-duty covers rated for a service load of 15,000 pounds over a 10-inch-square area.
 - d. Covers secured with stainless steel penta-head bolts.
 - e. Embossed legend on covers, "Electric," "Telephone," or "Signal," depending on the application.
 - f. Openings for quantity and size of conduits shown.
 - g. Quazite type "PC" or equal.

C. Wire, cables and connectors

1. Building wire.
 - a. Conductor. Annealed copper, class C stranding.
 - b. Insulation. 600 Volt rated, type THWN or XHHW, UL 44, 83 and 493.
 - c. Minimum size. 12 American Wire Gauge (AWG) for power, 14 AWG for control.
2. VFD Cable
 - a. UL 1277, UL 1581, ASTM B8/B33.
 - b. Flexible multi-conductor motor supply cable.

- c. Tinned copper conductors.
 - d. Class C stranding.
 - e. Flame-retardant, moisture-resistant thermoset (XLP) insulation.
 - f. Type XHHW conductors, 1000-Volt, 90⁰C, wet or dry locations, UL 44.
 - g. Overall foil or tape shield, drain wire, and PVC jacket.
 - h. Bare uncoated copper ground conductor.
- 3. Power terminal blocks
 - a. UL listed, 600 Volt, 75 degrees Celsius.
 - b. Tin-plated copper
 - c. Phenolic housing.
 - d. Two pole.
 - e. Size and quantity of lugs as required for the wiring shown.
 - 4. Splices, taps and terminations
 - a. UL 310, UL 486A-486B, UL 486C.
 - b. Copper or bronze alloy, tin-plated.
 - c. Compression type with standard barrel, configuration (end-to-end, C-tap, H-tap) as required.
 - 5. Cord connectors and strain relief
 - a. UL 514B, wet location, class I, division 2, group D.
 - b. Aluminum body threaded on each end.
 - c. Aluminum gland nut and neoprene bushing.
 - d. Wire mesh cord grip
- D. Wiring devices
- 1. Receptacles.
 - a. Industrial specification grade, single or duplex as shown.
 - b. UL 498, NEMA WD 1, straight blade NEMA WD6, 5-20R.
 - c. Brass alloy power contacts and terminal screws.
 - d. Side and back wired terminals.
 - e. One-piece brass alloy mounting strap, ground terminal, and ground contacts.
 - f. Self-grounding clip on mounting screw.
 - g. Thermoplastic back cover and nylon face, ivory.
 - 2. Switches.
 - a. Single-pole, 2-pole, 3-way, or 4-way as shown.
 - b. NEMA WD 1, UL 20.
 - c. Quiet-type alternating current (ac) switches, 20 ampere, 120-277 volt.
 - d. Side and back wired, screw pressure terminal.
 - e. Brass alloy terminal screws.
 - f. Yoke grounding screw.
 - g. Thermoplastic back cover and nylon handle, ivory.
 - h. Suitable for solid or stranded copper wire.
 - 3. Weatherproof Covers
 - a. UL 514D.
 - b. Rain-proof while in use in compliance with NEC Article 410-57.
 - c. Cast aluminum plate with neoprene gasket and metal screws.
 - d. Hinged, self-closing, cast aluminum device cover.
 - 4. Manufacturers: Subject to compliance, provide products by one of the following.
 - a. Hubbell Incorporated.
 - b. Leviton Manufacturing Company Incorporated.
 - c. Pass & Seymour/Legrand; Wiring Devices Division.

- E. Grounding
 - 1. Grounding electrodes. One piece, high strength steel core, electrolytic copper cladding, 3/4" x 10'-0".
 - 2. Grounding conductors. Stranded copper, insulated for sizes 8 AWG and smaller, green.
 - 3. Ground bus.
 - a. Bare annealed, 98 percent conductivity copper.
 - b. Rectangular cross section, 1/4" x 3" x length as required.
 - c. Cable lug hole spacing 2 inches center to center minimum.
 - 4. Exothermic welded connections.
 - a. IEEE 80 (1986)
 - b. Low resistance solidly welded connection.
 - c. Graphite moulds as required for the type and size of connection.
 - d. Weld material suitable for creating the high temperature required to fuse materials.
 - e. Igniter gun capable of igniting the weld material from a safe distance.
 - f. Provide all other tools and accessories necessary.

2.3 ELECTRICAL DISTRIBUTION EQUIPMENT

- A. Molded case circuit breakers.
 - 1. Quick make, quick break toggle mechanism, UL 489, and NEMA AB 1.
 - 2. Short circuit interrupting capacity.
 - a. 10,000 amperes symmetrical for 208Y/120 volt and 120/240 volt systems.
 - 3. Circuit breakers 400 amp and larger.
 - a. Solid-state trip device.
 - b. Breaker settings adjustable from controls on front of breaker.
 - c. Ground fault trip where provided adjustable for pickup and time delay values.
 - d. Ambient compensated for temperatures from -20 degrees Celsius (°C.) to 55° C.
 - 4. Ground fault circuit interrupting (GFCI) breakers.
 - a. UL 943.
 - b. Designed to trip on overcurrent, short circuit, and excessive ground fault current.
 - c. Ground fault trip setting.
 - 1) Equipment protection. 30 milliamperes (mA).
 - 2) Personnel protection. 4 to 6 mA, listed and labeled as a Class A, Type 1.
 - 5. Circuit breakers for combination magnetic motor starters.
 - a. Adjustable instantaneous only trip units.
 - 6. All other circuit breakers.
 - a. Bolt-in
 - b. Inverse time and instantaneous trip units.
- B. Safety switches
 - 1. UL 98, NEMA KS 1, NEMA 250
 - 2. Heavy-duty type, sheet steel enclosed
 - 3. Quick make, quick break mechanism
 - 4. Switch blades visible in OFF position with door open.
 - 5. High conductivity copper current carrying parts and silver tungsten switch contacts.
 - 6. Rated for 60 and 75 degree Celsius wire.
 - 7. Handle down in the off position.
 - 8. Pad-lockable in off position with up to three padlocks.
 - 9. Cover and handle interlocked to prevent opening cover with switch in closed position.
 - 10. Inconspicuous interlock defect mechanism.
 - 11. High conductivity copper current carrying parts and silver tungsten switch contacts

12. Positive pressure, spring-reinforced, class R rejection fuse clips on fusible switches.
 13. NEMA Type 4X stainless steel enclosures.
 14. Service equipment label on all safety switches used as service disconnecting means.
- C. Enclosed circuit breakers
1. Molded case circuit breaker as shown and specified above.
 2. NEMA AB 1.
 3. Mechanical lugs sized for quantity, size, and type of conductors shown on the drawings.
 4. Handle down in the off position.
 5. Padlockable in off position with up to three padlocks.
 6. Cover and handle interlocked to prevent opening cover with switch in closed position.
 7. Inconspicuous interlock defeat mechanism.
 8. NEMA Type 4X stainless steel enclosures.
 9. Service equipment label on all safety switches used as service disconnecting means.
- D. Surge protective device
1. UL 1449 3rd Edition.
 2. Protection in all modes, line-line, line-neutral, line-ground, and neutral-ground.
 3. Modular design with field-replaceable modules.
 4. Fabrication using bolted compression lugs for internal wiring.
 5. Integral disconnect switch.
 6. Redundant suppression circuits.
 7. Redundant replaceable modules.
 8. LED indicator lights for power and protection status.
 9. Audible alarm, with silencing switch, to indicate when protection has failed.
 10. One set of Form C contacts, for remote monitoring of protection status.
 11. Surge-event operations counter.
 12. NEMA Type 4X stainless steel enclosures.
 13. Surge current rating per mode.
 - a. Type 1 SPD for service entrance and main distribution panels. 200 kA.
 - b. Type 2 SPD for branch panels. 100 kA.
 14. Nominal discharge current: 20kA.
 15. Voltage protection rating:
 - a. 120/240V, single phase.
 - 1) Line-line. 900V.
 - 2) Line-neutral. 500V.
 - 3) Line-ground. 600V.
 - 4) Neutral-ground. 500V.
 16. Life cycle testing
 - a. Able to withstand 10kA (8x20 μ s), 20kV (1.2x50 μ s), IEEE C62.41 category C surge current with less than 5% degradation of clamping voltage.
 - b. Minimum withstand of 15,000 category C 10kA surges per mode.
 17. Overcurrent Protection
 - a. Individually fused surge suppression components
 - b. Rated to allow maximum specified surge current capacity
 - c. Interrupting rating 200 kA.
- E. Manufacturers. Subject to compliance, provide products by one of the following:
1. Circuit breakers, safety switches, enclosed breakers, transformers, and panelboards
 - a. Cutler Hammer Products.
 - b. General Electric Company.

- c. Siemens Energy & Automation, Inc.
 - d. Square D Company.
 - e. Or Equal.
2. Surge Protective Devices
- a. Cutler-Hammer
 - b. Square D Company
 - c. Liebert Corporation
 - d. Thor Systems, Inc
 - e. Or equal.

2.4 ACCESSORIES

A. Supporting devices

- 1. Fabricated supports
 - a. Constructed of structural tubing, angles, or channels.
 - b. Welded together to form a complete, secure, and durable assembly.
 - c. Ground welds smooth and flush.
 - d. Wire brush areas around welds to remove slag and spall.
 - e. Size support members to perform their support functions without deflection of more than one half percent of total height for vertical members and 1 percent of total span for other than vertical members.
 - f. Materials. AISI type 316 stainless steel.
- 2. U-channel supports
 - a. Stainless steel, AISI type 316.
 - b. Outside dimensions of 1-5/8" x 1-5/8", unless otherwise noted.
 - c. Holes, 9/16" diameter at 1-7/8" on center, unless otherwise noted.
 - d. Provide spring nuts, clamps, hangers, and hardware made of the same materials at the U-channel.

B. Identification

- 1. General.
 - a. Safety Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145.
 - b. Comply with ANSI A13.1, Table 3, for size of letters and length of color field.
- 2. Warning and caution signs.
 - a. Interior. Aluminum, punched or drilled for fasteners.
 - b. Exterior. Weather-resistant, non-fading, cellulose-acetate butyrate with 20 gauge (1-mm) galvanized-steel backing.
 - c. Preprinted with colors, legend, and size as required for the application.
 - d. Grommets, 1/4-inch (6.4-mm) in corners for mounting.
- 3. Equipment labels and instruction plates.
 - a. Laminated melamine plastic.
 - b. Black letters with a contrasting color face.
 - c. Minimum 1-inch high by 1/16 inch thick (25 mm high by 1.6 mm thick)
 - d. Punched or drilled for mechanical fasteners.
- 4. Underground-Line Warning Tape.
 - a. Permanent, bright-colored, continuous-printed, vinyl tape.
 - b. Not less than 6 inches wide by 4 mils thick (152 mm wide by 0.102 mm thick).
 - c. Compounded for permanent direct-burial service.
 - d. Embedded continuous metallic strip or core.
 - e. Printed legend indicating type of underground line.
 - f. Color to match requirements of APWA.

- 1) Electric and lighting lines, cables or conduits: Red.
- 2) Communication, alarm and signal lines, cables or conduit: Orange.
5. Colored marking tape. Self-adhesive vinyl tape not less than 7 mils thick and 1-inch wide (0.19 mm thick by 25 mm wide).
6. Wire labels. Permanent plastic heat shrinkable labels or self-adhesive wraparound labels with clear heat shrinkable jacket. Preprinted legends.
7. Cable Ties: Fungus-inert nylon, one-piece, self-locking and self-extinguishing.
 - a. Minimum Width: 3/16 inch (5 mm).
 - b. Tensile Strength: 50 lb (22.3 kg) minimum.
 - c. Temperature Range: Minus 40 to plus 185 deg F (Minus 40 to plus 85 deg C).
 - d. Color: As required by color-coding.
8. Fasteners: Stainless steel, self-tapping screws or size 10-32 machine screws with nuts and washers.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of Conditions
 1. Inspect installed work prior to performing the work of this section.
 2. Verify that the project has progressed to a point where this installation may begin.
- B. Discrepancies
 1. Immediately notify the Engineer in writing if any discrepancies are found.
 2. Resolve all discrepancies before proceeding with installation.
 3. Resolution must be acceptable to the Engineer.

3.2 PREPARATION

- A. Surface Preparation
 1. Carefully lay out the work in advance.
 2. Perform any cutting , drilling, etc. without damaging the building surfaces or equipment.
- B. Rough-in
 1. Refer to equipment submittals for rough-in requirements.
 2. Verify rough-in locations by field measurements.

3.3 INSTALLATION

- A. General
 1. Conform to submittal data.
 2. Conform to indicated arrangements.
 3. Provide all labor, material, tools, and equipment necessary for a complete installation of the work as indicated in the Drawings and Specifications.
 4. Raceway, wiring, cabling, pull boxes, junction boxes, etc. shown in the Contract Documents are diagrammatic in nature to show intent only.
 5. Do not cover up any until it has been inspected and tested.
 6. Coordinate with the general and mechanical trades before installing any outlets, power wiring, etc.
 7. Perform all work in accordance with the Contract Documents.

8. Perform all work in a neat and workmanlike manner consistent with recognized good practice
9. Patch or repair any damage resulting from the installation of the electrical work.
10. Remove all debris resulting from the work, as well as all tools and equipment, from the site upon completion of this contract.
11. Clean all dirt, grease, finger marks, etc., from all equipment, including lighting fixtures and lenses before final acceptance.

B. Conduit and boxes

1. Uses permitted for conduits:
 - a. Below grade: rigid nonmetallic conduit.
 - b. Stub-ups through concrete: PVC coated rigid steel.
 - c. Final connections to transformers, motors and similar devices subject to movement and vibration: liquid-tight flexible non-metallic conduit.
 - d. All other locations: rigid metal conduit.
2. Minimum 3/4-inch conduit, except where otherwise noted.
3. Run all conduits in straight lines, parallel with or at right angles to building walls, partitions, floors and ceilings.
4. When the location on the Plans interferes with other work in place or subsequently to be placed, the Contractor shall work out a satisfactory location, free from interferences.
5. Rigidly support all conduits with one-hole conduit clamps, conduit beam clamps, conduit hangers, or wall brackets, as required for the type of construction and/or as indicated on the Drawings.
6. Secure conduits so that they cannot be moved without the use of tools.
7. Where a group of conduits runs together, support the conduits on hangers fabricated from light steel framing unless otherwise shown on the Drawings.
8. Provide pull boxes, junction boxes, splice boxes and fittings where shown and at other locations as necessary and required by the National Electrical Code.

C. Underground pull boxes

1. Support units on a level bed of crushed stone or gravel, graded from the 1-inch sieve to the No. 4 sieve and compacted to same density as adjacent undisturbed earth.
2. Compact backfill as required to set units securely in place. Backfill and grading shall be sloped to drain surface water away from access covers.

D. Wire and cable.

1. Uses permitted.
 - a. Feeders to electrical distribution equipment: type XHHW.
 - b. Motor branch circuits: type XHHW.
 - c. Conductors from the VFDs to the pump motors: VFD cable.
 - d. Conductors for 4-20 mA analog signals: shielded twisted pair signal cable.
 - e. All other conductors: type THHN/THWN.
2. Minimum wire size shall be No. 12 AWG, except where otherwise noted.

E. Supporting devices

1. Provide all angle iron, channels, rods, supports, or hangers required to install any electrical equipment called for by the Contract Documents.

F. Identification

1. Identify all conductors for power and lighting feeders and branch circuits.
2. Use a different color for each phase conductor of each voltage system.

3. Match any existing color code and use a consistent color coding system throughout.
4. Identify control, signal, and communications wiring at all terminal and splice points.
5. Provide a typewritten directory on the inside of the door of each panelboard, designating the use and location of each circuit.
6. Provide an engraved nameplate on each panelboard, transformer, motor controller, safety switch, etc. to identify the equipment. Fasten nameplates to equipment enclosure a minimum of two self-tapping metal screws.

G. Grounding

1. Provide all materials and labor required to install an approved grounding system to an approved, adequate ground source, per NEC.
2. Ground all conduits, fixtures, receptacles, motors, panels and other exposed non-current-carrying metal parts of electrical equipment in accordance with all provisions of the National Electrical Code.
3. Provide a ground wire in all feeder and branch circuits.
4. Bond neutral to ground at the service equipment.
5. Make all connections of grounding electrode conductors to grounding electrodes with exothermic welds, except where otherwise noted.

3.4 FIELD QUALITY CONTROL

- A. Inspections: Provide for the services of a qualified representative of the manufacturer for a minimum of 1 day to inspect and approve the installation.
- B. Tests
1. After completion of all inspections, perform field testing.

END OF SECTION 26 0000

SECTION 26 32 13

ENGINE-GENERATOR SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General
 - 1. Drawings and general provisions of the Contract.
 - 2. General and Supplementary Conditions.
 - 3. All Division 01 specification sections.
- B. Related Sections
 - 1. Division 26 Section "Electrical".

1.2 DESCRIPTION OF WORK

- A. General: Provide all labor, tools, equipment, and materials necessary for a complete and functional engine-generator system in accordance with the plans and as specified herein
- B. Types of equipment specified in this section include:
 - 1. Engine-generator set.
 - 2. Batteries.
 - 3. Battery charger.
 - 4. Exhaust system.
 - 5. Weatherproof housing.
- C. Applications for the engine-generator power supply are:
 - 1. Plant equipment operation.

1.3 QUALITY ASSURANCE

- A. Codes: Perform all work in compliance with the following:
 - 1. All applicable federal, state, and local codes and regulatory requirements.
 - 2. National Electrical Code (NEC).
- B. Standards
 - 1. National Fire Protection Association (NFPA).
 - 2. Underwriters' Laboratories, Inc. (UL).
 - 3. American National Standards Institute (ANSI).
 - 4. National Electrical Manufacturers Association (NEMA).
 - 5. Institute of Electrical and Electronic Engineers (IEEE).
 - 6. Interstate Commerce Commission (ICC).
- C. Qualifications
 - 1. Manufacturer: Minimum of 5 years of experience in the manufacture of engine-generator systems of types, ratings, and characteristics specified.

2. Installer: Minimum of 3 years successful installation experience on projects utilizing equipment similar to that required for this project.

D. System Responsibility

1. Engine-generator system and accessories furnished by a single supplier.
2. Supplier responsible for the performance of the entire system.
3. Responsibility shall not be split among suppliers of individual components.

E. Testing

1. Prototype Test

- a. Performed on the model/series of engine-generator set to be supplied.
- b. Perform the following tests:
 - 1) Maximum power output.
 - 2) Maximum motor starting capability.
 - 3) Transient response and steady state governing.
 - 4) Single step load pickup per NFPA 110.
 - 5) Harmonic analysis and wave form deviation per MIL-STD-705B, Method 601.4.
 - 6) Three phase short circuit test for mechanical and electrical strength.
 - 7) Alternator temperature rise test per NEMA MG1.
 - 8) Fuel consumption.
 - 9) Engine alternator cooling airflow.
 - 10) Structural soundness.
 - 11) Torsiograph analysis per MIL-STD-705B, Method 504.2.

2. Factory Tests

a. General

- 1) Test performed prior to shipment.
- 2) Test performed under load with the transfer switch and all accessories.
- 3) Test measurements made with a light beam oscillograph.
- 4) Voltage dip and frequency deviation measured during the fourth complete cycle following application of the load.
- 5) Tests performed in accordance with the manufacturer's standards.

b. Tests

- 1) Stepped load test at 1/2, 3/4, and full load for 5 minutes each step.
- 2) Three-quarter block load.
- 3) Full single step block load.

c. Test Criteria

- 1) Maximum 15 percent RMS voltage dip during full single step block load test.
- 2) Maximum 15 percent frequency deviation during full single step block load test.
- 3) Voltage and frequency recovery to within ± 3 percent of rated in less than 5 seconds.

3. Field Test

a. General

- 1) Testing conducted by a representative of the supplier.
- 2) Testing to commence after completion of all work.
- 3) Load bank, fuel, and all testing equipment provided by the Contractor.
- 4) Test to be witnessed by the Owner or the Owner's Representative.

- 5) Notify the Owner or the Owner's Representative at least one week in advance.
- 6) Repeat the test until the equipment performs as specified.
- b. Cold Start Test
 - 1) Performed using the generator's actual load as a test load.
 - 2) Simulate power failure by opening the normal power disconnecting means.
 - 3) Record the following information:
 - a) Time delay on start.
 - b) Cranking on time.
 - c) Time required to achieve rated speed.
 - d) Voltage and frequency dip on application of load.
 - e) Time to achieve steady state.
 - f) Voltage, frequency, and amps at standby state.
 - g) Oil pressure, water temperature, and battery charge rate at 5 minute intervals for the first 15 minutes and at 15 minute intervals thereafter for 2 hours.
 - h) Time delay on retransfer after return of normal power.
 - i) Cool down time delay.
- c. Full Load Test
 - 1) Test to start after cooling time from cold start test.
 - 2) Perform a one step full load test using a load bank.
 - 3) Perform test with the load bank connected directly to the generator.
 - 4) Record the following information after applying the load:
 - a) Time required to achieve rated speed.
 - b) Voltage and frequency dip on application of load.
 - c) Time to achieve steady state.
 - d) Voltage, frequency, and amps at standby state.
 - e) Oil pressure, water temperature, and battery charge rate at 5-minute intervals for the first 15 minutes and at 15-minute intervals thereafter for 2 hours.
- d. Crank Cycle Test
 - 1) Disable generator start by manufacturer approved method.
 - 2) Test the crank cycle by switching the generator to run.
- e. Safety Shutdowns: Test all the generator safety shutdowns.

1.4 SUBMITTALS

A. General

1. Comply with the requirements of Division 1 Section "Submittals".
2. Submit information as described below.

B. Product Data

1. Manufacturer's technical product data sheets for all equipment specified in this section.
2. Delete or cross out all inappropriate or non-applicable information.

C. Shop Drawing

1. Dimensional drawings for the engine-generator set and all accessories.
2. Mounting details.

D. Wiring Diagrams

1. Show all components and features specified.
2. Show all connections to feeders, load, and accessory equipment.
3. Differentiate between factory and field installed wiring and components.

E. Quality Control Submittals

1. Submit warranty documents.
2. Manufacturer's current installation recommendations.
3. Prototype Test Report
 - a. Submit certified performance data and oscillograph plots prior to submitting shop drawings.
 - b. If required by the manufacturer, hand deliver confidential data to the Owner's Representative.
 - c. After acceptance, the information may be released back to the manufacturer.
4. Submit factory test report prior to shipment.
5. Submit certified copies of the field test report.
6. Operation and Maintenance Manuals
 - a. Include instructions on storage, installation, start-up, operation and maintenance.
 - b. Submit a complete parts list and a recommended spare parts list.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Equipment Storage

1. Store items furnished under this section until time of installation.
2. Meet the storage requirements of the manufacturer and supplier.
3. Do not deliver the stored equipment to the site until it is to be installed.

B. Protection

1. Use all means necessary to protect the materials and equipment before, during, and after installation
2. Protect the installed work and materials from the activities of all other trades.

C. Replacements: Immediately repair or replace any damaged equipment.

1.6 SPECIAL WARRANTY

A. Engine-Generator Set

1. Warrant the complete engine-generator set for a minimum of 5 years or 1,500 hours, whichever comes first, from the date of final acceptance.
2. Multiple warranties for individual components (engine, generator, controls, etc.) will not be accepted.
3. Warranty shall be a direct agreement between the responsible supplier and the Owner.
4. Warranty must be signed by both the supplier and Owner
5. Specific Coverage:
 - a. First year: Cover all travel time, mileage, labor, and parts.
 - b. Second and third years: Cover labor and parts only.
 - c. Fourth and fifth years: Cover parts only.
6. Warranty shall be a direct agreement between the responsible supplier and the Owner, signed by both the supplier and Owner and delivered via the Engineer/Architect to the Owner.

- B. Batteries: Provide a 3-year full replacement warranty with 10 years prorated warranty.

PART 2 - PRODUCTS

2.1 ENGINE-GENERATOR SET

A. General

1. Provide new equipment, of current manufacture, and free from defects or imperfections affecting performance.
2. All units of the same type of product shall be from the same manufacturer.
3. Provide an engine-generator set that is a standard model of the manufacturer.
4. Sizes, Ratings, and Quantities
 - a. Output power: **70** kilowatts (kW) at 0.8 power factor, minimum.
 - b. Output voltage: 120/240 volt, 1-phase, 3-wire, 60 Hertz at rated speed.
 - c. Motor starting capacity: **40** kilovolt amperes (kVA)
 - d. Maximum voltage dip: **35** percent root mean square (RMS) voltage dip as measured during the fourth complete cycle following the application of the load.
 - e. Steady state frequency regulation: ± 0.5 percent.
 - f. Maximum frequency dip. 10 percent.
 - g. Altitude rating: **800** feet above sea level.
 - h. Temperature: **104** deg F maximum and **-20** deg F minimum.
 - i. Rated for continuous standby operation.
 - j. Single step load pickup: Meet NFPA 110 requirements.

B. Engine and Accessories

1. Engine
 - a. Liquid cooled.
 - b. Four stroke cycle.
 - c. Spark-ignited.
 - d. Valves shall not require adjustment while in service.
2. Governor: Electronic speed sensing isochronous governor.
3. Starting System
 - a. Electric starting motor with starter pinion, dc.
 - b. Automatically disengage starter after engine starts.
4. Engine Fuel System
 - a. Primary and secondary replaceable element fuel filters.
 - b. Engine driven, mechanical, positive displacement fuel pump.
 - c. Individual, adjustment free injectors for each cylinder.
5. Air Cleaners: Engine mounted, replaceable element, dry type air cleaners.
6. Lubrication System
 - a. Positive displacement, mechanical, lubricating oil pump.
 - b. Full flow, replaceable element, oil filters.
 - c. Liquid cooled oil cooler.
 - d. Dipstick oil level indicator.
 - e. Spring loaded valve to bypass clogged oil filter.

C. Cooling System

- a. Radiator
 - 1) Remote mounted with thermostatically controlled electrically operated fan.
 - 2) Engine mounted with pusher type fan.

- b. Coolant: Fill with 50 percent solution of ethylene glycol and water.
 - c. Coolant Heater
 - 1) Engine mounted.
 - 2) Voltage: 240 volt, single phase
 - 3) Wattage: As required to maintain specified coolant temperature.
 - 4) Thermostatically controlled.
 - 5) Oil pressure switch disconnect
 - 6) Temperature range: 130 deg F to 160 deg F.
- D. Alarm Sensing: Provide sensing elements for the following alarms and engine shutdowns:
- 1. Low coolant temperature alarm.
 - 2. Low oil pressure alarm.
 - 3. Low oil pressure shutdown.
 - 4. High coolant temperature alarm.
 - 5. High coolant temperature shutdown.
 - 6. Over-speed shutdown.
 - 7. Over-crank lockout.
- E. Generator
- 1. Construction
 - a. Continuous-duty salient pole, synchronous generator.
 - b. Full amortisseur windings.
 - c. Drip proof, single bearing, self-aligning.
 - d. NEMA Class F insulation.
 - e. Directly connected to the engine through a flexible coupling.
 - f. Do not connect the generator neutral to ground at the generator.
 - 2. Exciter
 - a. Brushless rotating exciter with a solid-state full wave rectifier.
 - b. Capacity for 150 percent of required excitation at rated load and voltage.
 - 3. Voltage Regulator
 - a. Solid state.
 - b. ± 0.5 percent no load to full load regulation during steady state conditions.
- F. Engine-Generator Set Controls
- 1. Microprocessor based generator set control system providing the following:
 - a. Engine protection.
 - b. Alternator protection.
 - c. Electronic isochronous governor.
 - d. Electronic voltage regulation.
 - e. Operator interface.
 - f. Digital communication interface.
 - 2. Control functions
 - a. Generator output power thermal-magnetic circuit breaker.
 - b. Engine protection
 - 1) Battery voltage monitoring and protection
 - 2) Overspeed shutdown
 - 3) Low oil pressure warning and shutdown
 - 4) High/low coolant temperature warning or shutdown
 - 5) Low coolant level warning or shutdown
 - 6) Failure to start shutdown

- 7) Failure to crank shutdown
- 8) Cranking lockout
- 9) Sensor failure indication
- c. Remote emergency stop.
- d. Automatic start-stop cranking controls.
- e. Time delay start and cool down
- 3. Gauges and Meters
 - a. Engine oil pressure.
 - b. Coolant temperature.
 - c. Engine oil temperature.
 - d. Engine hour meter.
 - e. Voltmeter, selector switch, and potential transformers.
 - f. Ammeter, phase selector switch with "Off" position, and current transformers.
 - g. Frequency meter.
- 4. Display, controls and alarms
 - a. Alphanumeric display and backlight.
 - 1) Line-to-neutral and line-to-line AC volts
 - 2) AC current, three phases
 - 3) Frequency
 - 4) kVA
 - 5) Battery voltage
 - 6) Engine speed
 - 7) Lube oil pressure
 - 8) Coolant temperature
 - 9) Start attempts
 - 10) Running hours
 - b. Switches for the following:
 - 1) Auto
 - 2) Manual
 - 3) Start
 - 4) Stop
 - 5) Fault reset
 - 6) Lamp test
 - c. LED indicator lights for the following:
 - 1) Generator running.
 - 2) Remote start.
 - 3) Not in auto.
 - 4) Common shutdown.
 - 5) Common warning.
 - 6) Manual run mode.
 - 7) Auto mode.

G. Base

- 1. Mount the engine-generator set on a structural steel base.
- 2. Base shall maintain proper alignment between components during shipment, installation, and operation.
- 3. The engine-generator set shall be free from torsional stress when running within ± 10 percent of rated speed.
- 4. Vibration Isolators

- a. Provide spring type isolators with rubber backing between base and foundation.
 - b. Isolators shall provide a minimum of 90 percent isolation.
- H. Manufacturers: Subject to compliance with the requirements, provide engine-generator sets manufactured by one of the following:
- 1. Caterpillar Tractor Company.
 - 2. Cummins/Onan.
 - 3. Kohler.

2.2 ENGINE-GENERATOR SET ACCESSORIES

- A. Standby Power Service Disconnect
- 1. Size and type as shown on the one-line diagrams.
 - 2. UL service equipment label.
 - 3. Laminated plastic nameplate engraved "Standby Power Service Disconnect"
 - 4. Complementary nameplate with directions to the "Normal Power Service Disconnect(s)."
 - 5. Complementary nameplate for mounting at the Normal Power Service Disconnect(s).
 - 6. Comply with NEC Article 700-8(a), 701-9(a), or 702-8(a).
- B. Spare Parts: As recommended by the standby generator system manufacturer.

2.3 BATTERY SYSTEM

- A. Batteries
- 1. Lead-acid.
 - 2. Ampere-hour rating equal to or greater than the manufacturer's recommendations.
 - 3. Capacity for a minimum of three cranking cycles in the ambient temperatures specified.
 - 4. Unit mounted rack for battery mounting.
 - 5. Battery cables of adequate size to prevent voltage drop problems during cranking cycle.
 - 6. Battery heater blanket, 120 volt, to maintain batteries between 50 deg F and 90 deg F.
- B. Battery Charger
- 1. Automatic solid-state battery charger.
 - 2. Float and equalize charge rates.
 - 3. Automatic 24 hour equalizing timer.
 - 4. Automatic line voltage compensation.
 - 5. Output voltage regulation.
 - 6. Capable of fully recharging batteries within 24 hours.
 - 7. Fused input and output.
 - 8. Surge and current limit overload protection.
 - 9. Output ammeter and voltmeter
 - 10. Input voltage on pilot light.
 - 11. Equalize charge light.
 - 12. Alarm relays for connection to the generator annunciator.
 - a. Low output voltage
 - b. High output voltage.
 - c. Current failure.
 - d. Input power failure.

- C. Manufacturers: Subject to compliance with the requirements, provide equipment manufactured by one of the following:
 - 1. Chloride Incorporated.
 - 2. LaMarche Manufacturing Company.
 - 3. Marathon Battery Company.

2.4 EXHAUST SYSTEM

- A. Exhaust Silencer
 - 1. Side inlet.
 - 2. Multi-chambered construction.
 - 3. Critical silencing suitable for residential installation.
 - 4. Sized to assure proper operation without excessive back pressure.
- B. Exhaust Piping
 - 1. Minimum 24 inch long flexible stainless steel connecting pipe
 - 2. Additional exhaust pipe as required.
 - 3. Flanged condensate drain.
- C. Manufacturers: Subject to compliance with the requirements, provide equipment manufactured by one of the following:
 - 1. Nelson Industries Incorporated.
 - 2. Riley-Beaird, Inc.
 - 3. York Industrial/Exhaust Silencers.

2.5 WEATHERPROOF HOUSING

- A. General: Completely enclosed weatherproof housing to protect the generator from adverse weather conditions.
- B. Construction
 - 1. Constructed of reinforced sheet steel, primed and painted.
 - 2. Lockable, removable side panels.
 - 3. Lockable door over the generator control panel.
 - 4. Louvered vent air openings with throw away type dust/sand filters.
 - 5. Generator silencer mounted inside housing.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Inspection
 - 1. Inspect installed work of all other trades prior to performing work of this section.
 - 2. Verify that the project has progressed to a point where this installation may begin.
- B. Discrepancies
 - 1. Immediately notify the Engineer/Architect in writing if any discrepancies are found.
 - 2. Do not proceed with the installation until all discrepancies have been resolved in a manner acceptable to the Engineer/Architect.

3.2 INSTALLATION

- A. Engine-Generator Set
 1. Provide a concrete housekeeping pad and galvanized steel anchor bolts.
 2. Install the generator using the vibration isolators provided with the set.
 3. Level the generator set and secure in place as recommended by the manufacturer.
- B. Connections
 1. Tighten all connections in accordance with manufacturer's published torque values.
 2. Where manufacturer's requirements are not indicated, comply with UL Standard 486A.
- C. Grounding
 1. Do not connect the neutral wire to ground at the generator when using a three pole transfer switch.
 2. Provide a permanent engraved nameplate installed at the location where the generator neutral conductor is connected to a grounding electrode conductor per NEC Article 700-8(b), 701-9(b), or 702-8(a).
- D. Spare Parts: Tag all spare parts and store, on the site, as directed by the Owner.
- E. Instruction
 1. Provide for training by a qualified representative of the manufacturer.
 2. Provide a minimum of 1 day of start-up and operation training.
 3. Provide a minimum of 1 day of maintenance training.
 4. Training will not commence until all required tests have been performed and final approval has been given.

END OF SECTION 26 3213

SECTION 31 10 00

SITE CLEARING AND PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Clearing and grubbing.
2. Tree and shrub protection and removal.
3. Removal of debris related to clearing and grubbing operations.

B. Contractor shall perform a field investigation in the locations identified on the drawings to understand the extent of effort associated with site clearing. Contractor shall use this field investigation as a basis for bidding, and no additional costs will be approved by Owner for clearing or disposal of additional debris from the Site.

C. No tree over a 4 inch caliper shall be removed without the prior written approval of Owner, unless it is indicated to be removed on the Drawings. Wherever and whenever possible, trees shall be protected and saved, and only those trees which are directly in the line of construction (as shown on the drawings), shall be removed.

1.02 SUBMITTALS

A. Submit the following in accordance with Section 01 33 00 - Submittals and the Contract Documents.

1. Certificates

- a. Copy of herbicide label bearing EPA registration number.
- b. Copy of Arborist Certification.

B. If Contractor desires to remove trees that are not marked on the Contract Drawings for removal, he shall survey and mark all trees over a 4 inch caliper that he proposes to remove and submit a Removal Plan. Such Removal Plan shall include a listing of trees proposed to be removed, their location, species, and size. Trees so marked shall not be removed until Owner approves the Removal Plan. If trees that are not marked for removal are damaged or removed, whether purposefully or accidentally, the Contractor shall replace the trees or be liable for damages.

1.03 QUALITY ASSURANCE

A. Comply with the requirements specified in Section 01 43 00 – Quality Requirements and the Contract Documents.

B. Certifications:

1. Certified Arborist: All tree pruning, tree repair, and tree removal shall be performed by competent workers, under the supervision of an arborist holding certification from the International Society of Arboriculture (ISA) or equivalent education and experience.

1.04 DELIVERY STORAGE AND HANDLING

- A. Comply with the requirements specified in the Contract Documents and Specifications.
- B. Herbicide: Comply with Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) – Title 7 U.S.C. Section 136. Submit copy of herbicide label, bearing EPA registration number to Owner.

1.05 SITE CONDITIONS

- A. Existing facilities, structures, and utilities are shown in accordance with available surveys and records. The indicated locations of underground utilities and structures are approximate. Other utilities may exist which are not indicated.

1.06 DEFINITIONS

- A. Tree Caliper: Trunk caliper (trunk diameter) is measured 6 inches from the ground on trees up to and including 4 inches in caliper, and 12 inches above the ground for larger trees.
- B. Clearing: Removal and disposal of above-ground items defined herein.
- C. Grubbing: Removal and disposal of below-ground items defined herein.

PART 2 - PRODUCTS

2.01 ACCESSORIES

- A. Herbicide: Registered EPA Pesticide.
- B. Tree Wound Paint: Bituminous based paint formulated for tree wounds.
- C. Accessories shall comply with local, state, and federal rules and regulations.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify survey benchmarks and intended elevations for the Work are as indicated.

- B. Verify temporary erosion and sediment control measures are installed before commencing with any other work at the site.
- C. Verify location and existence of all underground utilities and structures by contacting Ohio Utilities Protection Service, as required by law. Access this information by dialing 811 or 1-800-362-2764 at least 48 hours but no more than 10 working days (excluding weekends and legal holidays) before beginning any digging.
- D. Provide 72-hour notice to existing utility owners, prior to beginning construction.
- E. Contact utility companies and authorities to make arrangements for handling and disposal of utilities encountered during construction.

3.02 PREPARATION

- A. Install project signage as required in the Contract Documents and Specifications upon mobilization at the site.
- B. Protect bench marks, survey control points, and existing structures to remain from damage or displacement.
- C. Protect trees and vegetation to remain. Do not cut or injure trees and vegetation outside easement lines and outside designated clearing areas.
- D. Protect all underground utilities and structures that are to remain. If damage occurs, immediately notify the utility owner within the hour.
- E. Protect site features to remain from damage by construction equipment and vehicular traffic.
- F. Identify waste and salvage areas for stockpiling of removed materials.

3.03 RESTORATION

- A. Existing surfaces, features, utilities, or structures that are to remain but are damaged during construction shall be restored to at least the condition in which they were found immediately before work began, unless noted otherwise.
- B. Restore damaged utilities to the satisfaction of the utility owner.
- C. Restore damaged private property to the satisfaction of the property owner.

3.04 EXISTING STRUCTURES AND PROPERTY

- A. Remove and reset existing signs, posts, catch basin frames and grates, manhole frames and covers, and concrete curbing within construction path unless directed otherwise.
- B. Store items as indicated in Contract Drawings and Specifications, at a site designated by Owner.

3.05 CLEARING

- A. Remove and dispose of offsite:
 - 1. Trees, snags, brush, shrubs, downed timber, decayed wood and other vegetative growth.
 - 2. Rocks, tiles, lumps of concrete, trash piles, debris, refuse and rubbish, and fencing. Remove all evidence of their presence from the surface.
- B. Clear ground as indicated in Contract Drawings, unless otherwise noted.
- C. Manual cutting of trees, stumps, and stubs during clearing shall be as close to ground surface as practicable but no higher than 6 inches above ground for small trees (8 inches or less), and not higher than 12 inches above ground for larger trees (greater than 8 inches).
- D. Obey all federal, state and local regulations and guidance regarding the cutting and disposal of diseased trees and vegetation.

3.06 GRUBBING

- A. Remove and dispose of all stumps, buried logs, matted roots, roots larger than 2 inches, and organic materials off site.
- B. Roots larger than 2 inches in diameter shall be removed to a depth of 12 inches, and roots larger than 1/2 inches in diameter to a depth of 6 inches.
- C. Areas designated to receive pavement or structures shall be grubbed a depth of 18 inches. Measure depths of grubbing from existing ground surface or proposed finished grade, whichever is lower.
- D. Apply herbicide to remaining roots and vegetation to inhibit growth.
- E. Depressions made by grubbing shall be filled with suitable material and compacted to conform to original adjacent grade as specified in the Contract Documents.
- F. Do not grub areas within drip line of trees to remain to avoid damage to roots.

3.07 TREE REMOVAL

- A. Remove trees within clearing limits as indicated on Contract Drawings by felling or cutting individual vegetation and grubbing.

3.08 TREE PROTECTION

- A. Protect designated trees within the clearing limits. Trees protection measures shall extend to the drip line of the tree.

3.09 PRUNING

- A. Trim dead branches 1-1/2-inches or more in diameter and branches to heights and in a manner as indicated. Neatly cut limbs and branches close to the bole of the tree or main branches. Paint cuts more than 1-1/4-inches in diameter with tree wound paint.

3.10 BURNING

- A. Burning is not permitted on site.

3.11 CLEANING

- A. Promptly dispose of excess and unsuitable material off site.
- B. Remove debris, junk, and trash from site.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris caused by construction activities within the public way, easement limits, or adjacent private property.

3.12 CLOSEOUT ACTIVITIES

- A. Provide in accordance with Section 01 77 00 - Contract Closeout and the Contract Documents.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 31 23 16

ROCK EXCAVATION AND DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide rock excavation and disposal in compliance with Contract Documents.
- B. Rock excavation could be performed by any of the following methods typically used in the construction industry. The contractor is advised to evaluate the subsurface information provided and determine the appropriate removal method.
 - 1. Expansive tools (no blasting allowed).
 - 2. Mechanical means.

1.02 SUBMITTALS:

- A. Submit for information only the following shop drawings in accordance with Section 01 30 00. The submittal is for information only, since the contractor is responsible for all means and methods. This submittal will not be reviewed by the Engineer.
 - 1. Proposed rock excavation technique.

1.03 QUALITY REQUIREMENTS:

- A. Comply with the requirements specified in Section 01 43 00.
- B. If rock is excavated beyond the limits of payment indicated on the drawings, specified, or authorized in writing by the Engineer, backfill excess excavation, whether resulting from overbreakage or other causes, at no additional compensation and as specified in Part 3 - Execution.

1.04 JOBSITE CONDITIONS:

- A. Protect structures, underground utilities, and other construction from damaged caused by rock removal and shoring system installation.
- B. Subsurface conditions are provided as an attachment to the Contract Documents. The contractor should anticipate that the rock will not be removed with conventional excavation equipment and that the use of special equipment (rock splitting equipment, pneumatic hammers, etc) will be required.

PART 2 - PRODUCTS

- A. Not applicable.

PART 3 - EXECUTION

3.01 ROCK REMOVAL

- A. Excavate and remove rock by methods determined by the contractor.
 - 1. Drill holes and utilize expansive tools or wedges, or other techniques to fracture rock.
- B. Cut away rock at bottom of excavation to form level bearing.
- C. Remove shaled layers to provide sound and unshattered base for footings and foundations.
- D. In utility trenches, excavate to 6 inch below invert elevation of pipe and 24 inch wider than pipe diameter.
- E. Remove excavated materials from site and dispose offsite..
- F. Correct unauthorized rock removal with lean concrete fill.

3.02 PROCEDURE:

- A. Excavate rock in pipe trenches to no less than 6 inches below the proposed invert of the pipe. Backfill trench, before pipe is laid, to correct subgrade elevation. Use compacted, specified material indicated on drawings, or the material specified for bedding pipe to backfill excess excavation. Furnish and place at no additional compensation.
- B. Fill excess excavation below elevation of the top of bedding, cradle, or envelope when in pipe trenches with material of same type and placed and compacted in same manner as specified for bedding, cradle, or envelope.
- C. Remove shattered rock. If rock below normal depth is shattered due to drilling of Contractor and Engineer considers such shattered rock to be unfit for foundations, remove it and backfill excavation with concrete as specified, except that in pipe trenches, use screened gravel for backfill. Do such removal and backfilling at no additional compensation.
- D. Remove dirt and loose rock, as directed, from designated areas and clean surface of rock using steam to melt snow and ice, if necessary. Remove water in depressions, so that whole surface of designated area can be inspected to determine whether seams or other defects exist.

- E. Roughen surfaces of rock foundations sufficiently, cut into benches or steps to bond well with masonry and embankments to be built thereon.
- F. Remove from the rock surface to remain all vegetation, dirt, sand, clay, boulders, scale, excessively cracked rock, loose fragments, ice, snow, and other objectionable substances. Use picking, barring, wedging, streams of water under sufficient pressure, stiff brushes, hammers, steam jets, and other effective means to accomplish this cleaning, and remove free water left on the surface of rock. Perform all of above before any masonry or embankment is built on or against rock.
- G. Remove piles of boulders or loose rock encountered within limits of earth embankments for disposal.
- H. Backfill with material obtained from outside sources at no additional compensation, when material specified for backfilling is not available in sufficient quantity from other excavations.

3.03 CONTRACT CLOSEOUT:

- A. Provide in accordance with Section 01 77 00.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 31 23 19
CONTROL OF WATER

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this Section includes control, handling, treatment, and disposal of groundwater, surface water, construction water, and any other water that may be encountered during the course of the Work.

1.02 PERFORMANCE REQUIREMENTS

- A. Control, handle, treat, and dispose of water of any origin (including groundwater, surface water, and pipeline flows) to permit construction to proceed on stable subgrades, to maintain stability of excavations, to prevent flooding, and to prevent damage to the environment, structures, and adjacent property. Contractor shall be responsible for control of water at all times during construction, and shall provide adequate backup systems to accomplish control of water.
- B. Methods of control, handling, and disposal of water shall be by whatever means are necessary and in conformance with this Section to maintain satisfactory working conditions and to maintain the progress of the Work. If, after installation and while in operation, the water control system fails to meet the performance requirements of this Section, Contractor shall modify or augment the water control system, at no additional cost to Owner.
- C. Contractor shall be responsible for evaluating the need to install dewatering wells, including gravity wells and wellpoint systems.
- D. Contractor shall bear the cost of loss or damage arising from removal or disturbance of groundwater, including subsidence or loss of structural support, that may occur in the prosecution of the Work.
- E. Perform this work without interference with the operations of other contractors, or the rights of public and private owners.

1.03 SUBMITTALS

- A. Submit a Water Control Plan describing the proposed method for control, handling, treatment, and disposal of water. As a minimum, describe the following:
 - 1. Water control methods (such as cutoff, sumping, predrainage), major equipment (excludes sump pumps), standby equipment, and power supply.

2. Dewatering well and wellpoint systems, if used, including plan location, size, depth, spacing, length and type of screen; pumping capacity; locations of headers and discharge lines; and means of discharge and disposal of water.
 3. Schedule of installation and operation of water control facilities.
 4. Means of monitoring groundwater levels and piezometric pressures.
- B. Submit a Water Treatment and Disposal Plan describing the proposed method for treatment and disposal of water. As a minimum, describe the following:
1. Sediment and pollution control facilities;
 2. Discharge locations to be used.
- C. Owner may require resubmittal if the system or any part thereof is materially modified during installation or operation.
- D. Submit, for information only, copies of permits required by regulatory agencies for control, handling, treatment, and disposal of water.
- E. Submit, for information only, copies of well abandonment records required by regulatory agencies.

1.04 REGULATORY REQUIREMENTS

- A. Construct dewatering wells in conformance with “State of Ohio Technical Guidance for Well Construction and Ground Water Protection” by the State Coordinating Committee on Ground Water, 2000. File a well log for each well in conformance with Ohio Revised Code 1521.05.
- B. Abandon dewatering wells in conformance with Ohio Administrative Code 3745-9-10 Well Abandonment Regulations.

1.05 CONTAMINATED WATERS

- A. In the event that contaminated waters are encountered, Contractor is required to notify Owner prior to discharging contaminated water into the sanitary sewer system. Contractor may be required to provide laboratory test results documenting contaminant concentrations. Compensation to Contractor for testing, treatment, and disposal of groundwater containing contaminants not anticipated in the Contract shall be determined in accordance with Article 12 of the General Conditions provisions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 CONTROL OF SURFACE WATER

- A. Prevent surface water, including runoff from adjacent properties, backup from storm sewers, and leakage from adjacent utilities, from draining into excavations. Intercept and divert surface water by use of surface grading, dikes, curbs, ditches, sumps, and other means.
- B. Extend the initial ground support system above outside grade as necessary to prevent flooding of the excavation from surface runoff. Allow no ponding of water outside the excavation.
- C. Assess and take appropriate precautions to prevent storm sewer overflow from flooding excavations.
- D. Assess the location and condition of adjacent water utilities, and re-route or provide supplementary support to avoid settlement damage to the utility and consequent leaks.

3.02 CONTROL OF WATER IN EXCAVATIONS

- A. Control water inflows to excavations to:
 - 1. Reduce water pressures acting on initial ground support systems designed to be leaky.
 - 2. Prevent piping or loss of fines through initial ground support systems.
 - 3. Prevent flowing or fast raveling ground.
 - 4. Prevent blowout, boiling, or heave in the excavation bottom.
 - 5. Maintain a firm working surface in the excavation bottom.
- B. Maintain the bottom of the excavation free of standing water to:
 - 1. Prevent swelling and softening of bearing soils.
 - 2. Avoid interference with construction activities such as placement of bedding and backfill, placement of pipe, erection of formwork, and placement and curing of concrete.
- C. Loss of fines through a leaky initial support system shall be prevented by the use of straw, hay, oakum, gravel, geotextile, or other filtering material.

3.03 PUMPING AND CONVEYANCE SYSTEMS

- A. Provide standby pumps and standby power supply where disruption of water control systems could allow water inflows to threaten the Work or the safety of personnel. Take immediate steps to control water inflow to the excavation that could cause loss or damage to adjacent structures or property.
- B. Convey all water from excavations through pipes or hoses. Conveyance in open ditches or trenches is prohibited. No water shall be discharged into the Work completed or under construction.
- C. Temporary drains used to construct tunnels or shafts shall be removed or grouted completely when no longer required.

3.04 DEWATERING WELLS

- A. Dewatering from wells shall be kept to the minimum necessary to accomplish the work.
- B. Wells shall be cased, screened, and filtered in such a manner that after development, no further fines are removed. Monitor each well for fines removal immediately after installation and at least weekly during operation.
- C. Provide means to adjust water discharge from each individual well, and monitor the discharge from each well on a daily basis.
- D. Design and operate wells in a manner that will preclude piping of fines (sediment consisting mainly of silt and sand) at a rate exceeding 15 mg/L. Wells that do not meet this criteria shall be abandoned and replaced if necessary, at no additional cost to Owner. Check each well for piping of fines using a centrifugal tester immediately after installation, and furnish sediment content test results to Owner within 24 hours.
- E. Ventilate enclosures around wells and water discharge points to prevent the accumulation of combustible gas that may escape from solution in groundwater.
- F. Abandon dewatering wells in accordance with legal requirements. Abandon well casings and pipes in place, by grouting the full depth of casings and pipes by tremie method or by pressure injection from the ground surface. Grout shall consist of cement and water, with the minimum amount of water necessary to allow pumping.
- G. Cut off well casings and pipes to at least 2 feet below final grade.

3.05 TREATMENT AND DISPOSAL OF WATER

- A. Water from excavations and dewatering wells shall be discharged into the nearest sanitary sewer in conformance with all applicable codes and regulations. Discharge into storm sewers, open waterways, or on open ground is prohibited.

- B. Prior to discharging water from excavations and dewatering wells, remove suspended solids, oils, cement, bentonite, and other visible contaminants normally found in excavation discharge by use of settling basins, on-site treatment plant, or other means. Reduce contaminant concentrations to levels acceptable to authorities having jurisdiction over receiving sewers.
- C. Select treatment systems that can be readily expanded if greater capacity becomes necessary during the course of the work.
- D. On completing the work, clean out and dispose of all sediments and residues in settling basins and treatment facilities. Dispose of sediments and residues off the Site in accordance with applicable regulations.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 31 23 33

TRENCH EXCAVATION AND BACKFILL

PART 1 - GENERAL

1.01 SUMMARY

- A. The work specified in this Section includes trench excavation in soil and rock, pipe laying, backfilling, and compaction.
- B. Pipe to be installed under this Section is specified in other Sections. See the appropriate Section on pipe for any additional requirements for laying and jointing pipe, specific to the pipe material being used.

1.02 REFERENCES

- A. ASTM C33 Standard Specification for Concrete Aggregates
- B. ASTM D75 Standard Practice for Sampling Aggregates
- C. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³)
- D. ASTM D2487 Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
- E. ASTM D3740 Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
- F. ASTM D5195 Standard Test Method for Density of Soil and Rock in Place at Depths Below the Surface by Nuclear Methods
- G. OSHA 29 CFR US Department of Labor, Occupational Safety and Health Administration, Code of Federal Regulations Title 29 Labor
- H. ODOT State of Ohio Department of Transportation Construction and Material Specifications

1.03 DEFINITIONS

- A. Definitions of terms in OSHA 29 CFR, Subpart P—Excavations, 1926.650(b), in its entirety, shall apply to this Section. Of particular interest to this Section are the following terms: excavation, trench, protective system, support system, shoring system, sloping system, benching system, shield, trench box, cave-in, and competent person.

1.04 CLASSIFICATION OF EXCAVATION

- A. Excavation is unclassified, and includes all materials encountered regardless of type and extent. Unclassified excavation includes removal of fill, rubble, building debris, soil, boulders, and bedrock, regardless of means necessary to break up materials for removal.

1.05 TRENCH EXCAVATION

- A. Trench excavation shall conform to OSHA 29 CFR Subpart P – Excavations, in its entirety.
- B. Protective systems for trench excavation shall conform to OSHA 29 CFR Subpart P, section 1926.652. Protective systems as defined in 1926.652 include sloping and benching systems, shield systems, and support systems.
- C. Contractor shall select protective systems suited to ground conditions described in the Geotechnical Memorandum, provided for information only.
- D. Protective systems shall be designed by a registered Professional Engineer licensed in the State of Ohio, having at least 5 years of experience designing similar support systems in similar ground conditions; except shield and support systems independently pre-manufactured and sold in interstate commerce shall be selected as appropriate for the Work by a registered Professional Engineer licensed in the State of Ohio.
- E. Additional requirements for initial ground support systems for trench excavations are shown on the Drawings and in Section 31 80 00 - Protection of Structures.

1.06 INITIAL GROUND SUPPORT SYSTEM DESIGN

- A. Initial ground support systems greater than 20 feet deep shall be designed for the minimum ground loads and surcharge loads. Contractor shall verify that ground loads and surcharge loads are adequate for the expected ground conditions, and are appropriate for the type of support system proposed. Contractor shall add construction loads appropriate to the means and methods of construction.
- B. Design of the initial ground support system shall consider:
 - 1. Ground conditions described in the Geotechnical Memorandum, provided for information only.
 - 2. Methods for control of water.
 - 3. Maintenance of soil stability at the bottom of the excavation.
 - 4. Deformation of the support system under load.
 - 5. The proximity of existing underground and above-ground structures, including buried water lines and the potential effect of their rupture on the support system.

6. Effects of vibration on adjacent structures, from driving and pulling sheeting and piling.
7. All loading conditions, including loading due to delay in adding support members, removal of support members, and dynamic loading.
8. Placement of permanent lining and structures.

1.07 PIPELAYING TOLERANCES

- A. Pipe shall be laid to within 0.05 foot of grade as measured at pipe invert, and to within 0.10 foot of line. Variation shall be further limited as necessary to prevent a level or reverse sloping invert.

1.08 SUBMITTALS

- A. Submit drawings, computations, and supporting information describing trench protective systems, in sufficient detail to demonstrate conformance with regulatory requirements.
 1. For all protective systems, where applicable to selection or design, submit:
 - a. OSHA soil classifications used in design.
 - b. Design loading conditions.
 - c. Tabulated data used in design.
 - d. Designs prepared by a registered Professional Engineer, signed and sealed.
 - e. Designer's qualifications.
 2. For sloping and benching systems, submit in addition, trench configurations and maximum allowable slopes.
 3. For shield systems, submit in addition:
 - a. Plan indicating the sizes, types, and configurations of structural components
 - b. Lateral load capacity.
 - c. Connection details, where shields are to be stacked.
 4. For support systems, submit in addition:
 - a. Plan indicating the sizes, types, and configurations of structural components.
 - b. Maximum allowable spacing between compression members.
 - c. Connection details for structural components.

- d. Methods of installation.
- 5. For shield systems or support systems that are manufactured or pre-engineered, submit in addition:
 - a. Specifications, recommendations, and limitations issued by the manufacturer.
 - b. Manufacturer's written approval of any deviation from said specifications, recommendations, and limitations.
- 6. Submit the resume of any persons designated as a "competent person," capable of identifying excavation hazards and authorized to take corrective measures to eliminate them.
- 7. Contractor shall respond promptly to requests by Owner for additional information to demonstrate conformance with regulatory requirements.
- B. Submit samples, certifications, and test results of imported bedding and backfill materials, and geotextile.
- C. Where boring under obstructions, submit proposed methods of boring, ground support, and backfilling the annular space between the installed pipe and the tunnel support system.

1.09 MATERIAL APPROVAL

- A. Material approval shall be based on the results of gradation tests performed by a commercial testing laboratory in conformance with Section 01 43 00 – Quality Requirements.
- B. Sample the aggregate source in accordance with ASTM D 75.
- C. Perform gradation tests at the place of production prior to shipment. As a minimum, sample each 1,500 tons of prepared materials for gradation testing, or no fewer than 3 samples. Sample more often as directed by Owner if gradation varies, or if the material appears to depart from the Specifications. Provide test results to Owner within 48 hours after sampling.

PART 2 - PRODUCTS

2.01 PIPE

- A. Pipe shall be as specified in Division 33 - Utilities.

2.02 FOUNDATION STABILIZATION MATERIAL

- A. Foundation stabilization material shall be used to replace compressible, soft, unstable, or otherwise unsuitable soils in the bottom of the excavation. Foundation stabilization

material shall consist of standard or coarse-graded foundation stabilization material, or pipe bedding material.

- B. Standard foundation stabilization material shall consist of a mixture of sand and gravel, conforming to the following grading requirements:

Sieve Size	Percent Passing by Weight
3-inch	100
No. 4	25 - 85
No. 40	0 - 20
No. 200	0 - 2

- C. Coarse-graded foundation stabilization material shall consist of clean, hard, durable crushed gravel or crushed rock with 100 percent by weight passing the 3-inch sieve, and with less than 8 percent by weight passing the 1/4-inch sieve.

2.03 PIPE BEDDING MATERIAL

- A. Pipe bedding material shall provide full and continuous support for the pipe.
- B. Pipe bedding material for trench in soil shall consist of crushed rock, crushed gravel, or sand.
1. For pipe larger than 18 inches in diameter, crushed rock pipe bedding shall be used.
 2. For pipe 18 inches and smaller in diameter, crushed gravel or sand bedding shall be used.
- C. Crushed rock pipe bedding shall consist of clean, hard, durable crushed limestone or dolomite. Crushed rock pipe bedding shall conform to the following grading requirements (ASTM C33 - Size No. 57; or ODOT Table 703.01-1, Size No. 57):
- D. Crushed gravel or sand bedding shall be comprised of natural gravel or natural sand materials conforming to the gradation requirements for ODOT Item 703.11 Structural Backfill Type 2.

2.04 PIPE COVER MATERIAL

- A. Pipe cover material shall be used over the pipe and bedding material to the top of the pipe zone as shown on the Drawings.
- B. Pipe cover material shall be crushed rock, crushed gravel, or sand conforming to the requirements for pipe bedding material.

2.05 BACKFILL ABOVE THE PIPE ZONE.

- A. Backfill under pavement shall be per trench detail on drawings.
- B. In off-road areas, parks, and undeveloped lands where minor settlement will not adversely affect the function, appearance, or value of the excavated area, or where CLSM backfill or granular backfill are not specified or shown on the Drawings, earth backfill may be used.
- C. Backfill beneath utilities exposed by trenching shall conform to the requirements of CLSM or granular backfill, and shall be placed to conform to existing backfill under undisturbed portions of the utility.

2.06 GRANULAR BACKFILL

- A. Granular backfill shall conform to the requirements of ODOT 304, except that steel slag is prohibited.

2.07 EARTH BACKFILL

- A. Earth backfill shall consist of soil, loam, or other excavated materials that are suitable for use as backfill. Earth backfill shall not include organic matter; refuse; rock, Portland concrete, asphalt concrete, or other consolidated masses larger than 1/2 cubic foot; or other unsuitable material.

2.08 UNSUITABLE MATERIALS

- A. The following materials shall not be used as backfill of any type:
 - 1. Soils classified under ASTM D 2487 as Pt, OH, CH, MH, or OL.
 - 2. Soils that cannot be compacted sufficiently to achieve the density specified for their intended use.
 - 3. Soils containing any material which may be classified as hazardous or toxic according to applicable regulations.
 - 4. Soils containing concentrations of chloride or sulfate ions greater than, or having a soil resistivity or pH less than, soils in place.
 - 5. Frozen ground.
 - 6. Recycled portland cement concrete or asphalt concrete.
 - 7. Steel slag aggregate.
 - 8. Lightweight aggregate.

2.09 ENVIRONMENTALLY CONTAMINATED MATERIAL

- A. At the Owner's direction, or where shown specifically on the Drawings, excavated material containing solid waste, petroleum contaminants, or special waste shall not be used as backfill above the pipe zone, within the confines of the area where the contaminated material originated.
- B. Excavated material containing solid waste, petroleum contaminants, or special waste shall not be used as backfill for manholes and miscellaneous concrete structures.
- C. Excavated material containing solid waste, petroleum contaminants, or special waste that cannot be used as backfill shall be disposed of in conformance with environmental regulations and Contract provisions.

PART 3 - EXECUTION

3.01 EXCAVATION

- A. Excavate the trench to maintain vertical side walls to the top of the pipe.
- B. Support the ground and control loss of soil into the excavation to prevent damage to adjacent structures and utilities, to maintain stability of the excavation walls, and to preserve the original strength of soils surrounding the excavation.
- C. In the event that systematic ground losses during excavation cause or threaten to damage structures or utilities, cease excavation and modify equipment and methods to reduce ground movements to prevent damage.
- D. As the excavation progresses, perform frequent inspections for indications of distress, such as surface cracking and subsidence along the excavation perimeter, and excessive deflection or failure of support system elements.
- E. Allow no cobbles, bedrock, or unyielding debris to project more than 3 inches within 6 inches of pipe or structure.
- F. Supplement the support system as designed to address variations in ground conditions as they are exposed in the excavation.
- G. Stockpiling of excavated spoils alongside the trench or excavation, within a distance equal to the depth of excavation, is prohibited.
- H. Where pipe is to terminate into manholes or shafts, place and compact backfill for the manhole or shaft to a minimum elevation of 1 foot above top of pipe prior to excavating trench and placing pipe.

3.02 CONTROL OF WATER

- A. Standing water in the trench during excavation is prohibited. Maintain the water table below the bottom of the excavation sufficiently to ensure a firm working surface.
- B. Control groundwater to prevent washout from behind sheeting, or raveling of trench walls.
- C. Provide dams, cutoffs, or other barriers periodically to preclude transport of water along the trench bottom during construction.
- D. Comply with all requirements of Section 31 23 19 Control of Water.

3.03 TRENCH WIDTH

- A. Trench width shall be as shown on the Drawings, and shall be no greater than necessary to ensure working room to properly and safely place and compact backfill in the pipe zone. The space between the pipe and trench wall shall be wider than the compaction equipment used in the pipe zone.
- B. Confine trench widths to dedicated rights-of-way or construction easements.
- C. The pipe zone, as shown on the Drawings, shall be considered to include the full width of the excavated trench.

3.04 OPEN TRENCH LENGTH

- A. The length of open trench in any location during work periods shall not exceed 50 feet. At the end of the workday, not more than one pipe-length of open trench shall be permitted.
- B. Open trench within the right-of-way or within 75 feet of any public roadway shall be barricaded with concrete Jersey barriers or covered with road plates.

3.05 BORING UNDER OBSTRUCTIONS

- A. Contractor may, with the approval of Owner, tunnel or bore under roadways, driveways, sidewalks, curbs or other obstructions provided that any tunnel section exceeding 2 feet in length is supported in conformance with OSHA regulations.
- B. The tunneling method used shall be compatible with requirements for maintaining line and grade, shall fully support overlying utilities or structures, and shall not damage the carrier pipe. Pipe ramming as a method of tunneling or boring is prohibited.
- C. The annular space between the carrier pipe and the initial tunnel support system, or between the carrier pipe and the ground, shall be backfilled completely with grout having a minimum 28-day compressive strength of 2,000 psi. Grouting shall be completed no later than one day of installing the carrier pipe.

3.06 FOUNDATION STABILIZATION

- A. Where the existing material in the bottom of the excavation is unsuitable for supporting the pipe or manhole, over-excavate and remove the unsuitable material, as approved by Owner.
- B. Where unsuitable material extends below the depth of overexcavation, place geotextile for stabilization over unsuitable material exposed in the trench as approved by Owner.
- C. Backfill the excavation with foundation stabilization material over the full width of the excavation, to the required trench bottom grade.
- D. Spread foundation stabilization material in uniform, loose lifts not to exceed 12 inches. Vibrate or tamp to maximize stability of the material and to maintain uniform pipe grade, applying at least two passes of compactive effort. Vibrate using a boom-mounted vibratory plate compactor, or tamp using the excavator bucket.
- E. Use of foundation stabilization material made necessary by Contractor's failure to maintain bottom stability due to inappropriate means of ground support or groundwater control shall be at no additional cost to Owner.

3.07 USE OF PORTABLE TRENCH SHIELDS

- A. A portable trench shield used during backfill operations shall be lifted above each layer of backfill material prior to compacting the layer. Do not advance the trench shield in a manner that would separate the pipe joint or leave voids in the ground.

3.08 USE OF SHEETING AND BRACING

- A. Where sheeting is required, sheeting shall be installed in advance of excavation and in a manner to minimize settlement adjacent the excavation due to ground movement, lost ground, or groundwater flow.
- B. Sheeting shall be removed, where permitted, as the excavation is backfilled, and in a manner to maintain stability and strength of soils, and to avoid disturbing adjacent utilities and structures. Voids left on removal of sheeting shall be backfilled to prevent subsidence.
- C. Sheeting may be left in place at Contractor's expense and with the written approval of Owner, provided that the top 6 feet below final grade is removed. Provide additional clearance as necessary for new or relocated utility lines or other structures.

3.09 CONTROL OF VIBRATIONS

- A. Control of vibrations to prevent damage to the Work or to adjacent property caused by vibrations from driving sheet piles shall conform to the requirements of Section 31 80 00 - Protection of Structures.

3.10 PLACING PIPE BEDDING MATERIAL

- A. Remove any loose, sloughing, or caving soil from the bottom and sidewalls of the excavation immediately prior to placing pipe bedding.
- B. Place pipe bedding material over the full width of the trench and to achieve pipe grade and elevation shown on the Drawings.
- C. Spread pipe bedding material in uniform, loose lifts not to exceed 8 inches. Vibrate or tamp each lift to maximize stability of the material and to maintain uniform pipe grade, applying at least two passes of compactive effort. Vibrate using a boom-mounted vibratory plate compactor, or tamp using the backhoe bucket.
- D. Raise the pipe bedding material uniformly on each side of the pipe so as not to laterally displace the pipe. Completely fill the space under the haunch of the pipe. Supplement the compaction equipment by using shovel slicing or spud bars to compact the material under the haunch of the pipe.

3.11 LAYING AND JOINTING PIPE

- A. Pipe shall be lowered, not dropped, into the trench. Cable, rope, or other devices for lowering pipe and fittings into trench shall be attached to the outside of the pipe or fitting, not through the interior.
- B. Prevent soil or foreign material from getting into the pipe during the laying operation.
- C. Ensure that each section of pipe is supported by compacted bedding material over full length of the barrel. Provide bell holes in pipe bedding, no larger than necessary, to ensure uniform support.
- D. Check each pipe for proper line and invert grade, and make appropriate adjustments, prior to making joint. If grade is low, remove pipe, prepare bedding for full pipe length, and re-lay. Do not bring pipe invert to grade by packing bedding material at points along its length.
- E. Clean all surfaces to be joined, particularly the gasket, to remove any soil or foreign material prior to applying joint lubricant. Assemble the joint in accordance with the pipe manufacturer's recommendations. Use mechanical means to pull pipe together and close joints tightly "home" as defined by the pipe manufacturer. Do not use excessive force that may result in over-assembled joints, dislodged gaskets, or damaged ends of pipe.
- F. If the joint cannot be properly made using normal force, disassemble the joint and check the position of the gasket. If the joint cannot be properly made after verifying position of the gasket, remove the pipe and replace with satisfactory pipe.
- G. Lifting holes in the pipe shall be sealed with specifically manufactured plugs, grouted into place.

- H. Pipe shall not be deflected either vertically or horizontally in excess of the printed recommendations of the pipe manufacturer.
- I. When field cutting or machining the pipe is necessary, use only tools and methods recommended by the pipe manufacturer and approved by Owner.

3.12 PLACING PIPE COVER MATERIAL

- A. After laying and jointing the pipe, place pipe cover material and compact to a height above the barrel as shown on the Drawings.
- B. Spread pipe cover material in uniform, loose lifts not to exceed 12 inches. Vibrate or tamp each lift to maximize stability of the material, applying at least two passes of compactive effort. Vibrate using a boom-mounted vibratory plate compactor, or tamp using the excavator bucket.
- C. Raise the pipe cover material uniformly on each side of the pipe so as not to laterally displace the pipe.

3.13 BACKFILL ABOVE THE PIPE ZONE

- A. Backfill trench as soon as practicable after pipe is installed to prevent disturbance of pipe and embedment.
- B. Portions of the trench excavated with sloped or benched walls shall be backfilled for the full width of the trench as specified herein.
- C. Do not permit backfill to free fall onto pipe with less than 2 feet of cover over the top of the pipe. Do not allow backfill to drop with force capable of damaging or displacing the pipe. Place backfill in a manner which avoids segregation. Stop backfill at the necessary grade to provide for placement of subgrade, surface course, or topsoil as required.
- D. Where trenching operations expose existing pipelines and telephone or electrical conduits, replace any bedding in a manner to restore the original grade and level of support of the pipe or conduit. Complete the trench backfill above the existing pipeline or conduit with the backfill shown or specified, or as directed by Owner.

3.14 PLACING GRANULAR BACKFILL

- A. Prior to placing granular backfill, bring the moisture content of the material within the range necessary to obtain the specified compaction, as determined by laboratory testing. Employ whatever means necessary to adjust the moisture content of the backfill, or provide alternative acceptable material.
- B. Place granular backfill in uniform, loose lifts not to exceed 8 inches. Compact each lift to a minimum of 98 percent maximum dry density at optimum moisture content as determined by ASTM D 698.

- C. Compact each lift using mechanical devices, hoe rams, jumping jacks, hand devices, or other equipment.

3.15 PLACING EARTH BACKFILL

- A. Deposit material from the excavation in maximum lifts of 12 inches and compact each lift to 90 percent of maximum dry density at moisture content within 2 percent of optimum as determined by ASTM D 698.

3.16 BACKFILL OF MANHOLES AND MISCELLANEOUS CONCRETE STRUCTURES

- A. Backfill around manholes and miscellaneous concrete structures on open-cut excavation shall conform to requirements for adjacent pipe.
- B. Backfill shall not be placed nor excavation support systems removed until internal supporting walls of structures have been completed.
- C. Remove all form materials and trash from the excavation before placing any backfill. Remove loose, sloughing, or caving soil from bottoms and sidewalls of excavation.
- D. Backfill around manholes and miscellaneous concrete structures only after the concrete has attained 2/3 of the specified compressive strength. Obtain Owner's approval of concrete work and attained strength prior to backfilling.
- E. Raise backfill uniformly around manholes and miscellaneous concrete structures to prevent unbalanced lateral loading.
- F. Do not operate earth-moving equipment within 5 feet of walls of manholes and miscellaneous concrete structures for the purpose of depositing or compacting backfill materials.
- G. Where compacting granular backfill adjacent to concrete walls, use hand-operated tampers or other equipment that will not damage the manhole or structure.

3.17 DENSITY TESTING

- A. Compaction of earth backfill above the pipe zone shall be tested in conformance with Section 01 43 00 – Quality Requirements.
- B. All material and backfill operations are subject to testing by Owner with the assistance of Contractor. Contractor shall cooperate with density testing work by leveling small test areas as designated by Owner, and allowing sufficient time for testing. Backfill test holes with material similar to that excavated, and compact to the specified density.
- C. Testing of in-place density and moisture content shall conform to ASTM D 5195, or other ASTM standard method or equivalent.

- D. Failure to achieve the specified backfill density will be just cause for rejection of any or all portions of the excavation section tested. Cost of retesting backfill not meeting specified densities shall be paid by Contractor, at no additional cost to Owner.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 31 80 00

PROTECTION OF STRUCTURES

PART 1 - GENERAL

1.01 SUMMARY

- A. The work of this Section includes protection of structures from damage due to ground settlement and vibrations.

1.02 PROTECTION AND RESTORATION OF STRUCTURES

- A. In this Section, the term "structure" means any public, commercial, or institutional building; school, church, residence, or associated service building (garage, storage shed, and the like).
- B. Contractor is responsible for control of ground movements and protection of the Work and adjacent structures and utilities.
- C. Perform trench excavations, including installation of initial ground support systems, in a manner that will minimize ground movement in front of and surrounding the excavation, and minimize subsidence of the surface, structures, and utilities above and in the vicinity of the excavation.
- D. Contractor shall be responsible for repairing damage to structures resulting from construction. In the event of damage to a structure, the Contractor shall restore the structure to conditions existing prior to construction, and to the satisfaction of the Owner, within 60 days of damage occurring.

1.03 ALLOWABLE GROUND SETTLEMENTS

- A. Control ground settlements as necessary to prevent settlement damage to existing utilities and structures along the tunnel alignment. Ground settlements include settlements due to lost ground, consolidation of compressible soils, and to dewatering.
- B. Except where more stringent requirements are specified, the average ground settlement over any distance of 100 feet along excavation shall not exceed 1.5 inches.
- C. Except where more stringent requirements are specified, ground settlement at the structure nearest to any excavation shall not exceed 2.5 inches
- D. In the event that specified allowable ground settlements are reached or exceeded, or lesser ground settlements cause or threaten to cause damage to utilities or structures, as indicated by settlement monitoring or direct observation, cease excavation immediately. Contractor shall immediately implement a contingency plan to modify equipment and methods of excavation to reduce ground settlements to within specified requirements.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 32 12 00

ASPHALT PAVING

PART 1 - GENERAL

1.01 SUMMARY

- A. This section describes the requirements for materials, testing, and installation of asphalt concrete pavement; including but not limited to the aggregate base course, tack coat, prime coat and seal coat.
- B. Subgrade preparation shall be as specified in Section 31 23 33 - Trench Excavation and Backfill, and as specified herein.
- C. Codes, specifications, and standards referred to by number or title shall form a part of this specification to the extent required by the reference thereto. Latest revisions shall apply, unless otherwise indicated.
- D. Except as specifically modified in this specification, paving and surfacing operations and materials shall comply with City of Elyria Standards and applicable sections of the 2016 Ohio Department of Transportation (ODOT) Construction and Material Specifications, including current revisions thereto.
 - 1. Item 202-Removal of Structures and Obstructions
 - 2. Item 203-Roadway Excavation and Embankment
 - 3. Item 204-Subgrade Compaction and Proof Rolling
 - 4. Item 301- Asphalt Concrete Base
 - 5. Item 304 -Aggregate Base
 - 6. Item 305-Portland Cement Concrete Base
 - 7. Item 401- Asphalt Concrete Pavements – General
 - 8. Item 407-Tack Coat
 - 9. Item 408-Prime Coat
 - 10. Item 441-Contractor Mix Design and Quality Control – General
 - 11. Item 448-Asphalt Concrete
 - 12. Item 641-Pavement Marking – General
 - 13. Item 644 – Thermoplastic Pavement Markings

14. Item 705-Concrete Incidentals

1.02 REFERENCES

- A. American Society of Testing and Materials (ASTM).
- B. Ohio Department of Transportation (ODOT), "Construction and Materials Specifications", Latest Edition.

1.03 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 01 43 00 – Quality Requirements and the Contract Documents.
- B. Qualifications:
 - 1. Contractor shall employ an independent testing laboratory to perform necessary field density tests. The results from the field density tests shall be to the satisfaction of Owner that proper compaction is obtained and that placement conditions are in compliance with the specifications.
 - 2. Asphalt Job-Mix Formula (JMF) shall be prepared by an approved certified independent laboratory under the supervision of a certified asphalt technician.

1.04 SUBMITTALS

- A. Submittals shall be as specified in Section 01 33 00 - Submittals and the Contract Documents.
- B. Shop Drawings:
 - 1. Asphalt Job-Mix Formula for pavement:
 - a. Submit for each separate mix to be incorporated into work.
 - b. Include maximum theoretical density for each proposed mix.
 - c. Use only ODOT approved job mix formulas.
 - 2. Manufacturer's Certificate of Compliance, with Standard Specifications, for the following materials:
 - a. Aggregate: Gradation, source test results as defined in the Standard Specification.
 - b. Asphalt for Binder: Type and grade and viscosity-temperature curve.
 - c. Prime Coat: Type and grade of asphalt.

- d. Tack Coat: Type and grade of asphalt.
 - e. Additives.
 - f. Mixes: Conforms to JMF.
3. Statement of qualification for independent testing laboratory.
4. Test Results:
- a. Marshall Mix Design.
 - (1) Aggregate gradation.
 - (2) Asphalt content.
 - (3) Stability number.
 - b. Field density.
 - (1) Asphalt
 - (2) Aggregate Base.
 - c. Permeability.
 - d. Asphalt compaction temperature

1.05 JOB CONDITIONS

- A. Weather limitations for the placement of asphalt concrete, tack coat, and prime coat shall be as stated in ODOT Items 401.06, 407.04, and 408.04 respectively.
- B. Do not place paving and surfacing materials on wet surface or when weather conditions would prevent the proper construction of paving and surfacing.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Asphalt concrete pavement, shall conform to Asphalt Concrete Pavements – General as referenced in ODOT Item 401.
- B. Surface and intermediate courses shall conform to ODOT Item 448, Types 1 and 2.
- C. Base Course shall conform to ODOT Item 301, Asphalt Concrete Base.
- D. Tack coat and prime coat shall conform to ODOT Items 407 and 408, respectively.

- E. Aggregate base shall be in conformance with Item 304 of the referenced ODOT Specifications.
- F. Concrete base shall be in conformance with Item 305 of the referenced ODOT Specifications.
- G. Sand (Blotter Material): Clean, dry, with 100 percent passing a 4.75 mm (No. 4) sieve, and a maximum of 10 percent passing a 75 mm (No. 200) sieve.

2.02 ASPHALT CONCRETE MIX (JOB-MIX)

A. General:

- 1. Asphalt Concrete: Provide dense hot applied asphalt plant mixes in accordance with ODOT Item 441 and 448. Reclaimed asphalt materials shall not exceed 10% of the mix design. Comply with the following:
 - a. Asphalt Surface Course: ODOT Item 448, Type 1, Medium Traffic.
 - b. Asphalt Leveling Course: ODOT Item 448, Type 2, Medium Traffic.
- 2. Asphalt Concrete for patching: Provide hot applied asphalt plant mixes in accordance with ODOT Item 441 and 448. Reclaimed asphalt materials shall not exceed 10% of the mix design. Comply with the following:
 - a. Asphalt Surface Course: ODOT Item 448, Type 1, Medium Traffic.
 - b. Asphalt Leveling Course: ODOT Item 448, Type 2, Medium Traffic.
- 3. Source Changes:
 - a. Should material source(s) change, establish a new asphalt job-mix formula before the new material(s) is used.
 - b. Perform check tests of properties of the plant-mix bituminous materials on the first day of production and as requested by Owner to confirm that properties are in compliance with design criteria.
 - c. Make adjustments in gradation or asphalt content as necessary to meet design criteria.

B. JMF(s) shall not be modified except with the written approval of Owner.

C. Composition: Hot-plant mix of aggregate, mineral filler (if required), and paving grade asphalt cement. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the grading requirements of the job-mix formula.

2.03 PERMANENT PAVEMENT MARKINGS

- A. All markings shall comply with ODOT Items 641 and 644 and shall include reflective glass beads.
- B. Payment shall be in accordance with the requirements of Section 01 29 01 – Measurement and Payment.

PART 3 - EXECUTION

3.01 GENERAL

- A. Traffic Control:
 - 1. Minimize inconvenience to traffic, but keep vehicles off freshly treated or paved surfaces to avoid pickup and tracking of asphalt.
- B. Asphalt Driveways:
 - 1. Re-pave driveways where existing pavement was removed.
 - 2. Leave driveways in as good or better condition than before start of construction.
- C. Gravel Driveways Resurfacing:
 - 1. Replace gravel surfacing on driveways which were gravel surfaced prior to construction.
 - 2. Provide compacted gravel surfacing to depth equal to original, but not less than 4 inches.
 - 3. Leave each driveway in as good or better condition as it was before start of construction.
- D. Preparation, Application and Installation of All Materials:
 - 1. Asphalt concrete pavement shall be installed in accordance with the ODOT Construction and Materials Specifications.

3.02 LINE AND GRADE

- A. Provide and maintain intermediate control of line and grade, independent of the underlying base to meet finish surface grades and minimum thickness.

3.03 SPREADING EQUIPMENT

- A. Spreading Equipment shall be in conformance to ODOT Item 401.12.

3.04 PREPARATION

A. Existing Roadway:

1. Modify profile by grinding, milling, or overlay methods as approved, to provide meet lines and surfaces and to produce a smooth riding connection to existing facility.
2. Remove existing material to a minimum depth of 1-inch.
3. Paint edges of meet line with tack coat prior to placing new pavement.

B. Thoroughly coat edges of contact surfaces (curbs, manhole frames, etc.) with emulsified asphalt or asphalt cement prior to laying new pavement. Prevent staining of adjacent surfaces.

C. Base Course:

1. Hauling Materials:

- a. Do not haul over surfacing in process of construction.
- b. Loads: Of uniform capacity.
- c. Measure capacity of truck to determine vehicle load and quantity.
- d. Maintain consistent gradation of material delivered; loads of widely varying gradations will be cause for rejection.

2. Spreading Materials:

- a. Distribute material to provide required density, depth, grade and dimensions with allowance of subsequent lifts.
- b. Produce even distribution of material upon roadway without segregation.
- c. Immediately change material placement methods if segregation of coarse from fine materials occurs during placement.

3.05 PAVEMENT APPLICATION

A. General: Place asphalt concrete mixture on an approved, prepared base in conformance with Standard Specifications.

B. Prime Coat:

1. Apply uniformly to clean, dry surfaces. Avoid overlapping applications.
2. Do not apply when moisture content of upper 3-inches of base exceeds optimum moisture content of base, or if free moisture is present.

3. Application Rate: Minimum 0.15 to maximum 0.5 gallons per square yard of surface area.
 4. Remove or redistribute excess material.
- C. Tack Coat shall conform to ODOT Item 407 and the requirements below:
1. Apply uniformly to clean, dry surfaces. Avoid overlapping of applications.
 2. Do not apply more tack coat than necessary for the day's paving operation.
 3. Touch up missed or lightly coated surfaces and remove excess material.
 4. Application Rate:
 - a. 0.05 to 0.06-gallon/ square yard on new asphalt. 0.08 to 0.09 gallon/square yard on milled asphalt.
 - b. Apply at rate, within range specified, sufficient to assure good bonding, but not so heavy that surplus asphalt flushes into asphalt concrete being placed.
- D. Pavement Mix:
1. Prior to Paving:
 - a. Sweep primed surface free of dirt, dust, or other foreign matter.
 - b. Patch holes in primed surface with asphalt concrete pavement mix.
 - c. Blot excess prime material with sand.
 2. Compacted Lift Thickness:
 - a. Minimum: Twice the maximum aggregate size, but in no case less than 1-inch.
 3. Total Compacted Thickness: As shown or to match existing pavement.
 4. Apply such that meet lines are straight and edges are vertical.
 5. Collect and dispose of segregated aggregate from raking process. Do not scatter material over finished surface.
 6. Joints:
 - a. Offset edge of each layer a minimum of 6-inches so joints are not directly over those in underlying layer.

- b. Offset longitudinal joints in roadway pavements, so longitudinal joints in surface course coincide with pavement centerlines and lane divider lines.
 - c. Form transverse joints by cutting back on previous day's run to expose full vertical depth of layer.
 - 7. Succeeding Lifts: Apply tack coat to pavement surface between each lift.
- E. Compaction shall conform to ODOT Item 401.16 and the requirements below:
 - 1. Uniformly compact each course to the target density arrived at in the compaction control strip.
 - 2. Roll until roller marks are eliminated and a minimum 95 percent compaction is obtained.
 - 3. Joint Compaction:
 - a. Place wearing layer as continuously as possible.
 - b. Cut back previously compacted mixture when work is resumed to produce a slightly beveled edge for full thickness of layer.
 - c. Cut away waste material and lay new mix against fresh cut.
- F. Tolerances:
 - 1. General: Conduct measurements for conformity with crown and grade immediately after initial compression. Correct variations immediately by removal or addition of materials and by continuous rolling.
 - 2. Completed Surface or Wearing Layer Smoothness:
 - a. Uniform texture, smooth, and uniform to crown and grade.
 - b. Maximum Deviation: 1/8-inch from lower edge of a 12-foot straightedge, measured continuously parallel and at right angle to centerline.
 - c. If surface of completed pavement deviates by more than twice the specified tolerances, remove and replace wearing surface.
 - 3. Transverse Slope Maximum Deviation: 1/4-inch in 12-feet from the rate of slope shown.
 - 4. Finished Grade:
 - a. Perform a field differential level survey on a maximum 15-foot grid and along all grade breaks.

- b. Maximum Deviation: 1/4-inch from the grade shown.

G. Sealing Joints:

1. General: Seal longitudinal and transverse joints, joints at abutting pavements, areas where the asphalt concrete was placed by hand, patched surfaces, gutters, around metal castings, and other areas as directed by Owner in accordance with ODOT 401.17.
2. Preparation:
 - a. Maintain surfaces that are to be sealed free of holes, dry, and clean of dust and loose material.
 - b. Seal in dry weather and when the temperature is above 35 degrees F.
3. Application:
 - a. Fill cracks over 1/16-inch in width with an asphalt-sand slurry or approved crack sealer prior to sealing.
 - b. When sealing patched surfaces and joints with existing pavements, extend minimum 3-inches beyond edges of patches.

3.06 PATCHING

A. Preparation:

1. Remove damaged, broken, or unsound asphalt concrete adjacent to patches. Trim to straight lines exposing smooth, sound, vertical edges.

B. Application:

1. Patch Thickness: 3-inches or thickness of adjacent asphalt concrete, whichever is greater.
2. Place asphalt concrete mix across full width of patch in layers of equal thickness.
3. Spread and grade asphalt concrete with hand tools or mechanical spreader, depending on size of area to be patched.

C. Compaction:

1. Roll patches with power rollers capable of providing compression of 200 to 300 pounds per linear inch. Use hand tampers where rolling is impractical.
2. Begin rolling top course at edges of patches, lapping adjacent asphalt surface at least 1/2 the roller width. Progress toward center of patch overlapping each preceding track by at least 1/2 the width of roller.

3. Make sufficient passes over entire area to remove roller marks and to produce desired finished surface.

D. Tolerances:

1. Finished surface shall be flush with and match grade, slope, and crown of adjacent surface.
2. Tolerance: Surface smoothness shall not deviate more than plus 1/4-inch or minus 0-inches when a straight edge is laid across patched area between edges of new pavement and surface of old surfacing.

3.07 AGGREGATE BASE COURSE FIELD QUALITY CONTROL

A. In-Place Density Tests:

1. Construct base course so areas shall be ready for testing.
2. Allow reasonable length of time for testing laboratory to perform tests and obtain results during normal working hours.
3. Perform 1 test for each 500 square yards of material placed.

3.08 ASPHALT PAVEMENT FIELD QUALITY CONTROL

A. General: Contractor shall provide services of an independent testing laboratory to conduct tests.

B. Field Density Tests:

1. Asphalt paving shall be tested in accordance with ODOT specifications and testing laboratory recommendations.
2. Measure with properly operating and calibrated nuclear density gauge.
3. Maximum Density: In accordance with ASTM D2041, using a sample of mix taken prior to compaction from the same location as the density test sample.

C. Testing Frequency:

1. Quality Control Tests:
 - a. Mix Design Properties, Measured Maximum (Rice's) Specific Gravity: Once every 1,000 tons or once every 8 hours, whichever is greater.
2. Density Tests: Once every 500 tons of mix or once every 4 hours, whichever is greater.

3.09 PERMANENT PAVEMENT MARKINGS

- A. Apply permanent pavement markings in accordance with ODOT Items 641 and 644.
- B. All pavement markings shall be the entire width of the pavement.
- C. All pavement markings removed during construction, including stop bars, turn arrows, crosswalks, etc., shall be replaced. The color and width of pavement markings shall match existing markings.
- D. Moving marking operations shall be performed by a truck equipped with necessary flashers and warning signs and shall be protected by a similarly equipped trailing vehicle or vehicles separated a sufficient distance to provide adequate advance warning to overtaking traffic. The marking operation should use the extreme left or right lane when possible.
- E. Stationary marking operations in intersections, school zones, gores and other areas shall be protected with traffic control devices such as advance warning signs and cones.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 32 16 00

CURBS, CURB RAMPS, APRONS, AND SIDEWALKS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish and install materials and perform related work necessary to complete work shown or specified. Contractor shall be responsible for all work involved in the repair and replacement of existing curbs, gutters, sidewalks, curb ramps, and aprons damaged or destroyed during construction of the work. Replacement in kind with respect to base courses, surface courses, and thicknesses, unless otherwise indicated or directed. Finish elevations, lines, and grades shall be the same as items removed unless otherwise shown on the Drawings.
- B. Notify Owner a minimum of 48 hours in advance of Work to require Owner testing.
- C. Subgrade preparation shall be as specified in Section 31 23 33 – Trench Excavation and Backfill and as specified herein.
- D. Codes, specifications, and standards referred to by number or title shall form a part of this specification to the extent required by the reference thereto. Latest revisions shall apply, unless otherwise indicated.
- E. Perform cutting and patching of pavements as indicated, specified, or directed by Owner.
- F. Except as specifically modified in this specification, paving and surfacing operations and materials shall comply with applicable sections of the 2013 Ohio Department of Transportation (ODOT) Construction and Material Specifications, including current revisions thereto.
 - 1. Item 202-Removal of Structures and Obstructions
 - 2. Item 203-Roadway Excavation and Embankment
 - 3. Item 204-Subgrade Compaction and Proof Rolling
 - 4. Item 304-Aggregate Base
 - 5. Item 451-Reinforced Portland Cement Concrete Pavement
 - 6. Item 452-Non-Reinforced Portland Cement Concrete Pavement
 - 7. Item 499-Concrete – General
 - 8. Item 508-Falsework and Forms

9. Item 509-Reinforcing Steel
10. Item 605-Underdrains
11. Item 608-Walks, Curb Ramps, and Steps
12. Item 609-Curbing, Concrete Medians, and Traffic Islands
13. Item 703-Aggregate
14. Item 705-Concrete Incidentals

1.02 REFERENCES

- A. ODOT Construction and Material Specifications, Latest Edition.

1.03 QUALITY ASSURANCE

- A. Comply with the requirements specified in Section 01 43 00 – Quality Requirements and the Contract Documents.
- B. Testing Laboratory Services:
 1. Owner shall employ an independent testing laboratory to perform necessary field density tests to demonstrate that proper compaction is obtained and that placement conditions are in compliance with the specifications and to the satisfaction of Owner.
 2. Contractor shall employ a testing laboratory service for all testing required to determine mix designs, maximum theoretical densities, and specification compliance.

1.04 SUBMITTALS

- A. Submittals shall be as specified in Section 01 33 00 – Submittals and the Contract Documents.
- B. Submit the following:
 1. Name and location of concrete ready-mix plant.
 2. Type and composition of proposed materials and mixes, including moisture - density curves.
 3. Certificates of Compliance certifying compliance with the referenced specifications and standards.
 4. Statement of qualification for independent testing laboratory.

- 5. Test Results: Concrete.
 - a. Mix Design.
 - (1) Aggregate graduation.
 - (2) Cement content.
 - (3) Water content.
 - (4) Air Content.
 - b. Slump.
 - c. Pavement thickness.
 - d. Compressive Strength.

1.05 JOB CONDITIONS

- A. Replacement of concrete pavement shall be as stated in ODOT Item 451.07.
 - 1. Do not place paving and surfacing materials on wet surface or when weather conditions would prevent the proper construction of paving and surfacing.
 - 2. Do not place paving and surfacing materials when natural light is not sufficient to properly observe work on operations.
 - 3. Do not place aggregates on frozen subgrade or when air temperature is below 35°F.

PART 2 - PRODUCTS

2.01 AGGREGATE BASE

- A. Aggregate base shall be in conformance with Item 304 Aggregate Base of the referenced ODOT Specifications.

2.02 CONCRETE

- A. Reinforced Portland cement concrete pavement shall be in conformance with Item 451 of the referenced ODOT Specifications.
- B. Non-reinforced Portland cement concrete pavement shall be in conformance with Item 452 of the referenced ODOT Specifications.
- C. Concrete shall be in conformance with Item 499 of the referenced ODOT Specifications.

- D. Concrete Sidewalks and Curb Ramps shall be in conformance with Item 608 of the referenced ODOT Specifications.

2.03 REINFORCED PORTLAND CEMENT CONCRETE PAVEMENT, WALKS, AND STEPS

A. Forms:

1. Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal of forms. Use straight forms, free of distortion and defects.
2. Forms shall meet the requirements of ODOT Item 508.
3. Coat forms with a non-staining form release agent that will not discolor or deface surface of the concrete.

B. Welded Wire Mesh:

1. Welded steel wire fabric in conformance with ODOT Item 509.

C. Reinforcing Bars:

1. Deformed Steel Bars in conformance with ODOT Item 509.

2.04 WALKS, CURB RAMPS AND STEPS

- A. Concrete Sidewalks, and Curb Ramps shall be in conformance with Item 608 of the referenced ODOT Specifications.

2.05 CURBING

- A. Concrete Curbing shall be in conformance with Item 609 of the referenced ODOT Specifications.

2.06 CONCRETE FINISHES

- A. Finish concrete sidewalks in accordance with ODOT Item 608.03.

2.07 ACCESSORIES

A. Expansion Joint Materials:

1. Comply with requirements of ODOT Items 705.03 and 705.04 for preformed expansion joint fillers and sealers.

B. Curing and Sealing Compound

1. Comply with requirements of ODOT 705.07 (Type 2).

PART 3 - EXECUTION

3.01 GENERAL

- A. Contractor is responsible to provide equipment, workmanship, and materials required to achieve a finished product which meets these specifications.
- B. Use compaction equipment suitable for the material being placed. Compacting equipment shall include at least one piece of equipment capable of providing a smooth, even surface for the pavement surface course.
- C. Prior to placing paving and surfacing materials, level the subgrade to produce smooth, even finished pavement grades. Fill all gullies and ruts with additional ODOT Item 304 aggregate base material. Subgrade and aggregate base materials shall be compacted in accordance with ODOT Item 203.
- D. Do not place paving and surfacing material before subgrade is reviewed and accepted by Owner. Do not place paving and surfacing materials on a frozen or muddy subgrade.
- E. Provide adequate drainage at all times to prevent water from standing on subgrade.

3.02 CUTTING AND PATCHING

- A. At time of installing permanent pavement, edges of existing pavement shall be cut back 24-inches or more, as required, to sound undamaged material with vertical face cleaned and prepared for bonding with new pavement as indicated, specified, or as directed by Owner.
- B. Where work is located in sidewalks and similar narrow paved areas, the whole width shall have permanent pavement replaced.
- C. Disturbed or eroded gravel base course to be restored as required before placing pavement.
- D. Manhole covers, catch basin grates, valve boxes, and similar items shall be adjusted to conform with pavement grade or as directed by Owner; items shall be removed and reconstructed as necessary. This work shall be completed prior to final paving.
- E. Surface of existing pavement to which new pavement is to bond shall be treated with cut back asphalt or emulsified asphalt, applied at a rate between 0.05 and 0.15 gallons per square yard of surface.

3.03 CURB CONSTRUCTION

- A. Construct curb in accordance with ODOT Item 609.
- B. Construct curbs and ramps as indicated in the Contract Drawings.
- C. Replace curb in kind if not specified otherwise on the Contract Drawings.

3.04 SIDEWALK CONSTRUCTION

- A. Construct sidewalk in accordance with ODOT Item 608.
- B. Place, process, finish, and cure concrete according to ODOT Items 451, 499, 508, and 608.
- C. Slope sidewalks away from structures at 1/4-inch per foot, unless noted otherwise. Sidewalk cross slope shall not exceed 1/4-inch per foot.
- D. Expansion and contraction joints shall be installed as indicated on the drawings, as required, and as directed by Owner. Expansion joints shall be required whenever new concrete abuts fixed objects or existing concrete surfaces, whether or not shown on the drawings.
- E. Finished sidewalk shall present a uniform appearance for both grade and alignment. Remove any section of sidewalk showing abrupt changes in alignment or grade or that is more than 2 inches away from its location as staked and construct new sidewalk in its proper location.

3.05 CURB RAMP CONSTRUCTION

- A. ADA compliant curb ramps shall be installed at intersections and other major pedestrian crossing points where adjacent curb and sidewalk are being constructed, reconstructed, and/or altered due to new roadway/sidewalk, street opening, and utility trench construction.
- B. ADA compliant curb ramps shall be installed to replace or upgrade existing pedestrian curb ramps at intersections and other major pedestrian crossing points due to new roadway/sidewalk, street opening and utility trench construction.
- C. A companion ADA compliant curb ramp shall be installed for the opposite side of the street for each new ramp regardless of project or other work limits.
- D. All material and workmanship shall be in accordance with the Ohio Department of Transportation, Construction and Material Specifications, Latest Edition The ODOT, Construction and Materials Specifications shall govern all construction items that are a part of this plan
- E. The Contractor shall be responsible for Curb Ramp and sidewalk layout. Contractor shall be responsible for having the finished work conform to the lines, grades, elevations and dimensions to meet ADA Requirements. Any inspection or checking of the Contractor's layout by the City and the acceptance of all of any part of it shall not relieve the Contractor of its responsibility to secure proper dimensions, grades and elevations of the several parts of the work. The Contractor shall use competent personnel and suitable equipment for the layout work required.

- F. Truncated Domes For Ramps: All curb ramps shall have a Distinctively-Textured walking surface, detectable by cane, to warn pedestrians with visual impairments of an impending hazard on the circulation route ahead. The detectable warnings shall consist of truncated dome with a diameter of nominal 0.9 IN. (23 MM), a height of nominal 0.2 IN. (60 MM). The detectable warnings shall be 24 IN. (610 MM) in the direction of travel and extend the full width of the curb ramp or flush surface, except the flare surface. The location of the detectable warning shall be located so that the edge nearest the curb line or other potential hazard is 6 to 8 Inches (150 to 205 MM) from the curb line or other potential hazard.
1. Truncated domes shall be a contrasting color.
- G. The attached drawings for different types of ADA compliant curb ramps are for the most prevalent situations. However, under circumstances that are not detailed in the drawings, it is the contractor's responsibility to layout the curb ramp to meet ADA Requirements.
- H. Dimensions are based on a 6-inch curb height, and shall be proportionally adjusted for other curb heights.
- I. The thickness of concrete in the Curb Ramp, including flared sides and rolled edges, shall be as per City Specification
- J. Ramps specified at 8-inch thickness shall be 8-inch thick everywhere in the ramp including the flared areas.
- K. A 3-foot minimum width ramp may be used when existing space prohibits the construction of a 4-foot wide ramp with the approval of the City of Elyria.
- L. The ramp slope shall not exceed 12:1 at any Curb Ramp locations where pedestrian traffic must travel along or across the Curb Ramp.
- M. Cross-slope of Curb Ramps and sidewalks shall not exceed 48:1.
- N. Transitional sections of sidewalk, that do not meet current standards and specifications, shall be installed to connect the new or replaces Curb Ramps. These transitions segments of sidewalk shall provide a smooth transition between the existing and new concrete.
- O. All existing manhole covers, valve boxes, gratings, etc., that are located within the pedestrian right-of-way, shall be flushed mounted with the walking surface. Existing obstructions shall not have more than $\pm 1/4$ inch difference in elevation than the surrounding surface.
- P. The location of Curb Ramps in new construction shall take precedence over the location of drainage structures, guardrails and traffic utility or light poles.
- Q. The bottom edge of the Curb Ramp shall be flushed with the edge of the adjacent pavement and gutter line.

- R. Curb Ramps shall be aligned with the sidewalk and the crosswalk where possible. If alignment is not possible the Contractor is to notify the City of Elyria prior to proceeding with construction activities at this location.
- S. Crosswalk markings placed in conjunction with Curb Ramp Types CR-3, CR-7, AND CR-9 shall be located such that, at a minimum, the Curb Ramp, exclusive of the flared sides or rolled edges, shall be completely contained with the crosswalk.
- T. Crosswalk markings places in conjunction with Curb Ramp Types CR-1, CR-2, CR-4, CR-5, CR-6, CR-8, CR-10, CR-11 shall be located at least 2-feet beyond the outside of the flared sides.
- U. The rolled edges shall be constructed so that they are parallel to the direction of pedestrian traffic.
- V. Rolled edges shall only be used adjacent to tree lawns, utility strips and large obstructions such as signal controllers.
- W. The normal gutter flow line shall be maintained throughout the Curb Ramp area, and appropriate drainage structures shall be used, as needed, to intercept the flow of water prior to the Curb ramp area. Positive drainage shall also be provided to carry water away from the intersection of the Curb Ramp and gutter line.
- X. Surface texture of Curb Ramps shall be coarse-broomed or other approved method transverse to ramp slope (minimum 1/8 inch - maximum 3/16 inch deep) beyond the TRUNCATED DOMES part of the ramp.
- Y. Curb poured separately from the ramp shall be separated from the ramp by 1/2 inch pre-molded expansion joint filler per ODOT CMS 705.04.
- Z. When less than 3-feet of a curb section remains after the curb cut is located, it shall also be removed and replaced. New curb shall be constructed in a minimum of 3-foot sections and a maximum of 5-foot sections, or as directed by the City of Elyria.
- AA. Fill for sidewalk and Curb Ramps, if required, shall be limestone screenings compacted in layers not exceeding 2-inches. The cost for the sub-base is considered incidental to ramp construction and no additional cost will be paid for by the City.
- BB. Curb Ramps and surrounding concrete walk shall be constructed of Portland cement concrete,
- CC. 1/2 inch pre-molded expansion material shall be placed whenever new concrete touches existing construction 1/2 inch joint filler per ODOT CMS 705.04.
- DD. Forms shall consist of wood or metal and extend for the full depth of the concrete, and of sufficient strength to resist the pressure of the concrete without springing.

EE. An approved curing compound shall be properly applied immediately after finishing the concrete.

3.06 FINISHING

A. Finish in accordance with ODOT Item 608 and 609.

3.07 PROTECTION

B. Protect concrete from damage and replace if damage occurs.

3.08 FIELD QUALITY CONTROL

C. Work specified within this Section shall be tested in accordance with ODOT specifications and testing laboratory recommendations, or as directed by Owner. All quality control field testing services shall be provided by Owner.

3.09 CLEANING

D. Clean job site of rubbish, excess material, structures, and equipment. Restore damaged property.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 32 90 10

SITE RESTORATION AND LANDSCAPING

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Restore all surfaces within the work limits that are damaged or disturbed by construction operations.
- B. Replace or repair all pavements, roadways, curbing, gutters, guardrails, culverts, sidewalks, structures and appurtenances, fencing, mailboxes, and other like items, which were damaged or removed during the work.
- C. Replace or repair all pavements, roadways, curbing, gutters, curb ramps, etc. per City requirements.
- D. Grade all disturbed ground to original contours or to contours as directed by Owner. Grading shall be performed in accordance with the requirements elsewhere in these Specifications.
- E. Furnish and install topsoil, fertilizer, seed, mulch, and related items necessary to complete work shown or specified.
- F. Contractor shall seed and mulch all vegetated areas cleared, damaged or destroyed during construction work. All areas that previously supported vegetation or trees shall be seeded and mulched.
- G. Culverts, sewers, and drainage ditches shall be repaired immediately to restore flows.
- H. Upon completion of work, remove all temporary facilities, sheds, offices, barricades, tree protection, signs, fences and other facilities and restore ground to original contours.
- I. Replace any ornamental shrubbery destroyed or damaged by Contractor's operations. Use approved nursery for this work.
- J. Replace any vegetation, including trees, hedges, or shrubbery being used as a visual barrier, that is damaged or removed during the work to provide a visual barrier equivalent to the barrier damaged or removed.
- K. Notify Owner 30 days prior to commencing restoration work on City properties or within City rights-of-way.

1.02 QUALITY ASSURANCE AND QUALITY CONTROL

- A. Comply with the requirements specified in Section 01 43 00 – Quality Requirements and the Contract Documents.

- B. Quality and size of replaced items shall be equal or better than that which existed prior to construction.
- C. Unless otherwise shown or specified, pavement and sidewalk replacement must be of the same type material and construction as the original work.
- D. Where joints are made in existing work they shall be straight, neat, and sealed.
- E. All work must meet the approval of Owner.

1.03 SUBMITTALS

- A. Comply with the requirements specified in Section 01 33 00 – Submittals and the Contract Documents.
- B. Submit the following:
 - 1. Manufacturer's Certificate of Compliance certifying compliance with applicable standards and specifications.
 - 2. Prior to placement of any mulch, deposit, at a location on the site suitable to Owner, 1/2 cubic yard sample of mulch for examination. After mulch sample is reviewed by Owner, provide mulch conforming to accepted sample.
 - 3. Submit vendor's certified analysis for soil amendments and fertilizer materials. Submit other data substantiating that materials comply with specified requirements.
 - 4. Submit seed vendor's certified statement for each grass seed mixture required, stating botanical and common name, percentage by weight and crop year identification, and percentages of purity, germination and weed seed for each grass seed species.
 - 5. Prior to end of maintenance period, furnish 2 copies of written maintenance instructions for maintenance and care of installed lawn areas.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Comply with the requirements specified in Section 01 66 10 – Delivery, Storage, and Handling and the Contract Documents.
- B. Contractor shall be responsible for the delivery, storage, and handling of fencing products, in accordance with these specifications.
- C. Promptly remove damaged products from the job site. Replace damaged products with undamaged products.

- D. Deliver packaged materials in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark, weight and conformance to state law. Protect materials from deterioration during delivery and while stored at site.
- E. Do not drop materials.

1.05 SITE CONDITIONS

- A. Seed between March 15 and June 1 and/or between September 1 and November 15. Do not sow seed during adverse weather conditions. Do not broadcast seed during high wind. Do not sow seed when the moisture content of the soil is too low or too high for seed germination.
- B. Prepare a proposed planting schedule. Schedule dates for each type of landscape work during normal seasons for such work in area of site. Correlate with specified maintenance periods to provide maintenance from date of substantial completion. Once accepted, revise dates only as approved in writing, after documentation or reasons for delays.

1.06 WARRANTY

- A. Guarantee new material through one full growing season after planting is completed.
- B. Guarantee materials replaced under this for one full growing season from date of replacement.
- C. Repair damage to plants or lawns during plant replacement.
- D. Guarantee lawn areas for duration of one full year after seeding to be alive and in satisfactory growth at end of guarantee period.
- E. For purpose of establishing an acceptable standard, scattered bare spots, none of which is larger than 1 square foot will be allowed up to a maximum of 3% of lawn area.

PART 2 - PRODUCTS

2.01 QUALITY ASSURANCE

- A. Ability to deliver:
 - 1. Investigate sources of supply and make assurances that material will be supplied as indicated in planting schedule in sizes, variety and quality noted and specified before submitting BID.
 - 2. Failure to take this precaution will not relieve responsibility for furnishing and installing material in accordance with Contract requirements and without additional expense to Owner.

B. Inspection:

1. Upon delivery and before planting, Owner will inspect materials. Plant no material prior to inspection by Owner.

C. General:

1. Package standard products with manufacturer's certified analysis. For other materials, provide analysis by recognized laboratory made in accordance with methods established by the Association of Official Agriculture Chemists, wherever applicable.
2. Check material prior to commencing of planting operations. Notify Owner at least 48-hours in advance of all planned planting operations and identify specific material and its location.
3. Furnish suitable quantities of water, hose and appurtenances.
4. Use loam having prior vegetative growth that did not contain toxic amounts of either acid or alkaline elements.
5. Begin maintenance immediately after each portion of lawn is seeded and continue for minimum of 60 days.
6. Repair or replace seeded areas, plants, shrubs, and trees which, in judgment of Owner, have not survived and grown in a satisfactory manner, for a period of one year after acceptance.
7. Provide, as specified, seedings or plantings replacements of the same type and size.
8. Dry loam test samples to constant weight at temperature of 230 degrees Fahrenheit, plus or minus 9 degrees.

2.02 TOPSOIL

- A. Topsoil will be stockpiled for re-use in landscape work. If quantity of stockpiled topsoil is insufficient, provide additional topsoil as required to complete landscape work.
- B. Provide new topsoil which is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter, and free of roots, stumps, stones larger than 1-1/2 inches in any dimension and other extraneous or toxic matter harmful to plant growth.
- C. Obtain topsoil from local sources or from areas having similar soil characteristics to that found at project site. Obtain topsoil only from naturally, well-drained sites where topsoil occurs in a depth of not less than 4-inches; do not obtain from bogs or marshes.

2.03 LAWN PRODUCTS

- A. Limestone shall be agricultural grade with a minimum total neutralizing power of 90. At least 40% of the limestone shall pass a No. 100 sieve, and at least 90% shall pass a No. 8 sieve.
- B. Fertilizer shall be 12-12-12 grade.
- C. Grass seed mix for all areas shall be as shown on the plans.
 - 1. Seed shall not contain more than 5% inert matter. Seed shall not contain objectional weeds.
 - 2. Mulch shall be straw, grass, hay, pine needles, or wood fiber. Straw shall be threshed straw of cereal grain such as oats, wheat, barley, rye, and rice. Mulch shall not contain objectional weed seeds or other material that might be detrimental to the planting being established.
- D. Asphalt adhesive shall be emulsified asphalt. Adhesive shall meet the requirements of ASTM D977 for Grade SS-1.

2.04 TREES

- A. Existing trees to be removed within City rights-of-way are identified on the drawings. The replacement tree species type are shown on the drawings.

PART 3 - EXECUTION

3.01 GRADING

- A. Fine grade all non-paved areas disturbed during construction. Areas shall be smooth and uniform. Finish elevations and grades shall be the same as elevations and grades prior to construction, unless otherwise shown on the drawings.

3.02 PREPARATION OF SEEDED AREAS

- A. Prior to preparation of areas to be seeded, remove existing grass, vegetation, and turf. Dispose of such materials outside of the project sites. Do not turn over any removed material into the soil being prepared for seeding.
- B. Loosen subgrade of areas to be seeded to a minimum depth of 4-inches. Remove stones over 1-1/2-inches in any dimension and sticks, roots, rubbish and other extraneous matter. Limit preparation to areas, which will be planted promptly after preparation.
- C. Place 6-inches of topsoil over area to be seeded.
 - 1. Spread planting soil mixture to minimum depth required to meet lines, grades and elevations shown, after light rolling and natural settlement.

2. Place approximately one-half of total amounts of planting soil required. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil.
3. Grade areas to be seeded to smooth, even surface with loose, uniformly fine texture. Roll and rake and remove ridges and fill depressions as required to meet finish grades. Limit fine grading to areas, which can be planted immediately after grading.
4. Moisten prepared areas to be seeded before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.
5. Restore areas to be seeded to specified condition if eroded or otherwise disturbed after fine grading and prior to planting.

3.03 SEEDING

- A. Loosen the seed bed, if not loose, to a depth of from 1- to 2-inches below finished grade.
- B. Apply fertilizer in the amount of 20 pounds per 1,000 square feet.
- C. Sow grass seed at the rate of not less than 2-1/2 pounds per 1,000 square feet in each of two directions at right angles to each other. Total seed rate shall be 5 pounds per 1,000 square feet.
- D. Apply agricultural grade limestone in the amount of 25 pounds per 1,000 square feet.
- E. Seeds and fertilizers can be sown with standard agricultural drills. Grass seeds may be sown broadcast or with a special seeder attachment on agricultural drills, but shall not be covered with more than 1/2-inch of soil, whether drilled or raked in. If not covered by the drill, all uncovered seed shall, immediately after sowing, be slightly raked or harrowed to cover the seed.

3.04 MULCHING

- A. Apply mulching material following seeding.
- B. Apply mulching material, except wood fiber, at a rate of 46 pounds per 1,000 square feet. Apply wood fiber at a rate of 35 pounds per 1,000 square feet.
- C. Punch mulching material into the soil so the mulch is partially covered. The punching operations shall be performed longitudinally with a mulch tiller. Use proper mulch tilling equipment. Evenly distribute mulch.
- D. Unless otherwise noted, hold the mulch in place with tackifier when the seeded area has a slope steeper than 4-feet horizontal to 1-foot vertical. Apply tackifier immediately after the mulch is placed. Apply tackifier at manufacturers recommended rate.

3.05 TREES

- A. Notify Owner 30 days prior to removing existing trees within a right-of-way, so the Owner can coordinate with the City

3.06 WATERING

- A. Thoroughly water seed and trees immediately after planting.
- B. Water grass and trees as necessary to establish and maintain growth until project is completed.

3.07 MAINTENANCE

- A. Maintain landscaped areas for not less than 60 days after planting.
- B. Maintain lawn areas and other seed areas at maximum height of 2-1/2 inches by mowing at least three times. Weed thoroughly once and maintain until time of final acceptance. Reseed and re-fertilize with original mixtures, watering or whatever is necessary to establish over entire area of lawn and other seeded areas a close stand of grasses specified and reasonably free of weeds and undesirable coarse native grasses.
- C. Begin maintenance immediately after each planting and continue until final acceptance of work. Water, mulch, weed, prune, spray, fertilize, cultivate and otherwise maintain and protect all plants.
- D. Reset settled plants to proper grade and position, and restore planting saucers and remove dead material. Tighten and repair guys. Correct defective work as soon as possible within guarantee period.

3.08 PROTECTION

- A. Provide protection against traffic and construction operations by erecting barricades immediately after landscaping is completed and by placing warning signs.
- B. If landscaping is damaged or destroyed, the affected landscaping shall be repaired or replaced to the satisfaction of Owner at Contractor's expense.
- C. Protect work until accepted.

3.09 CLEAN-UP

- A. Remove soil or similar material, which has been brought onto paved areas, keeping these areas clean.
- B. Upon completion of planting, remove excess soil, stones, and debris which have not previously been cleaned up; legally dispose of off-site.
- C. Prepare lawns and planting areas for final inspection.

- D. Protect slopes and embankments against erosion until work is accepted. Repair eroded portions of seeded or sodded areas by refilling, re-sodding, re-mulching and reseeded as required by condition and to satisfaction of Owner. Protection may be by installation of sod strips or other methods.

3.10 INSPECTION AND ACCEPTANCE OF SEEDED AREAS

- A. Seeded areas will be inspected at completion of installation and accepted subject to compliance with specified materials and installation requirements.
- B. Inspection to determine acceptance will be made by Owner upon Contractor's request. Provide notification at least 10 working days before requested inspection date.
- C. Inspections shall be scheduled by Contractor to take place immediately after a maintenance occurrence.
- D. Seeded areas will be acceptable provided all requirements, including maintenance, have been complied with, and a healthy, uniform, close stand of the specified grass is established free of weeds, undesirable grass species, disease, insects, and surface stones.
 - 1. Scattered bare spots, none of which is larger than one square foot, will be allowed up to a maximum totaling 3% of the individual lawn areas.
 - 2. Where inspected seeded areas do not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by Owner and until the work is found acceptable.

END OF SECTION

SECTION 33 01 35

MAINTENANCE, SUPPORT, AND RESTORATION OF UTILITY FACILITIES

PART 1 - GENERAL

1.01 SUMMARY

- A. This section provides for the protection, support, maintenance, and reconstruction or relocation of existing underground and above ground utility facilities if affected by reasons of construction operations. The existing utility facilities include gas, electric, water, telephone, cable television, sewer, and storm drainage, in addition to others shown on the drawings and specified in the Specifications.
- B. Working methods and procedures that might, in the opinion of Owner, cause damage to any underground utility facility will not be acceptable. However, Owner's acceptance of construction methods and procedures does not relieve Contractor of his responsibilities regarding the protection and preservation of the utilities.
- C. For the purpose of establishing the exact location of subsurface utilities, Owner may direct the excavation of test pits. Failure of Owner to direct the digging of test pits will not be considered as relieving Contractor of his responsibilities regarding the protection and preservation of utilities.

1.02 SUBMITTALS

- A. Shop and Work Drawings:
 - 1. Prepare and submit, to the Utility owner and to Owner, working drawings and shop drawings showing the plan and scheduling for performance of the work.
 - 2. Show on the drawings the actual location of existing facilities, any interference which these facilities present to the new work, proposed construction, and details of proposed support system.
 - 3. Start work only after approval in writing has been received from the Utility owner and Owner.
- B. Notification of Utilities
 - 1. Pursuant to Section 153.64 of the Ohio Revised Code, Owner has contacted owners of underground facilities for information relating to the existence and location of underground utility facilities within the construction area.
 - a. There are utility companies which are not members of an underground utility protection service. Contractor must contact Owner for a listing of the non-member utilities.

2. Within ten (10) calendar days of the award of this Contract, Owner will give notice by certified mail of the award of this Contract and the name and address of Contractor to all owners of underground utility facilities known to be located in the construction area.
3. Contractor shall be responsible for all losses costs and expenses, direct or indirect, arising out of or in any way related to damage or injury to any underground utility facility in the following circumstances:
 - a. Contractor fails to comply with the above paragraph hereof and the damage or injury could have been prevented or mitigated, in whole or in part, if Contractor had complied with such paragraph hereof.
 - b. The underground utility facility was located as marked by Owner of the underground utility facility or Contractor had actual notice of the location of the underground utility facility.
 - c. Contractor hereby agrees to indemnify and save harmless Owner from and against all liabilities, claims, or demands arising out of or in any way related to such damage or injury and further from and against any judgment, settlement, penalty, loss, costs, expenses, liability, or damages that Owner may directly or indirectly sustain, suffer, or incur as a result thereof.
4. Contractor shall immediately alert the occupants of nearby premises as to any emergency that Contractor may create or discover at or near such premises. Contractor shall report immediately to Owner or operator of the underground utility facility any break or leaks on its lines or any dent, gouge, groove, or other damage to such lines or to their coating or cathodic protection, made or discovered in the course of their excavation.
5. In the event of a dispute as to the application of Section 153.64 of the Ohio Revised Code, the dispute shall be resolved in accordance with the provisions of this Contract.

1.03 SITE CONDITIONS

A. Location of Facilities:

1. Owner has relied upon the utility owners to provide information about the existence and location of underground facilities. Reasonable diligence has been made by Owner to reflect the information obtained from the utility companies on the Contract Drawings; however, the locations are not guaranteed correct. Owner accepts no responsibility for and makes no representation or warranty as to the accuracy or completeness of the utility information provided on the Contract Drawings.
2. Verify by field investigation the locations of facilities within and adjacent to the limits of the project which may be affected by construction operations, as herein

specified, and that may adversely affect the construction operations. Avoid damage or disruption of facilities during this operation.

3. Whenever an existing facility is encountered which is not shown on the Drawings, or when a facility is determined to differ from that indicated, determine ownership, use, and disposition of such facility, and perform all necessary work approved by Owner and the Utility owner. Payment for such work will be made in accordance with the General Terms and Conditions.

B. Responsibilities:

1. For work not shown on the drawings, Contractor shall pay Utility directly if the Utility performs work not shown on the Drawings as an aid to Contractor's construction. Obtain and pay for all necessary permits. If Contractor elects to remove, replace, or relocate any poles, utilities, or structures, he shall be responsible to make all arrangements and obtain all necessary utility engineering, design, permits, and approvals from the Utility and Owner.
2. Contractor shall be responsible to restore any damaged or displaced property to the pre-existing condition all with the full knowledge and approval of Owners of the property. This applies equally to all above and below ground properties, utilities, structures, and appurtenances involved. Where the damaged item involves public health and safety, it must be repaired within 24 hours or Owner may have the repairs made at the expense of Contractor. Contractor shall repair all other items expeditiously.

C. Location of Buried Utilities and Structures:

1. It is Contractor's responsibility to accurately locate all utilities, structures, and appurtenances in the field. Contractor shall also make all arrangements and liaisons necessary with the Utility companies concerned to mark their lines, structures, and appurtenances by coded symbols on the pavement or marked stakes. All of the above shall be done in advance of any construction, and notification shall be given to the Utility and Owner six (6) weeks prior to utility field markings.
2. Contractor shall perform subsurface investigations as necessary and sufficiently in advance of trenching or excavation to enable adequate planning of construction.
3. Subsurface investigations shall be performed as necessary to field verify the locations, depth of bury, diameter, and pipe material of existing underground utilities at crossings and at tie-in points before ordering materials or commencing excavation. Immediately notify Owner if conflicts are encountered.
4. The cost of subsurface investigations shall be incidental to the work being performed.

D. Coordination with Utilities:

1. Establish through Owner direct and continuous contact with the respective Utilities and cooperate with them in all phases of the work.
2. Contact the Utility early enough to allow sufficient time to accomplish the work they are required to perform, giving special consideration to the lead times required for cable work. Provide the Utility with the schedule of utility relocation to coordinate with the sequence of construction.
3. To locate buried telephone cables, call the local telephone company's "buried cable location service" at least 48-hours prior to starting any excavation.
4. Prior to disconnecting any water service, notify the Utility owner 48-hours in advance for permission. Coordinate as required.
5. Power poles shall be supported at the expense of the Contractor.

PART 2 - MATERIALS (Not Used)

PART 3 - EXECUTION

3.01 SETTLEMENT OR MOVEMENT

- A. In case of settlement or other movement, which might cause damage, take immediate remedial measures to correct the conditions and damages caused by the settlement.

3.02 EXCAVATION AND BACKFILLING OF UTILITY TRENCHES

- A. Excavate and backfill utility facility trenches in accordance with the Specifications. Proceed with caution in the areas of utility facilities and expose them by hand or other excavation methods acceptable to the facility owner.

3.03 REPLACEMENT OR RELOCATION OF EXISTING UTILITIES

- A. All existing utility systems which conflict with the construction of the work herein shall be relocated or temporarily removed and replaced, as required. Such relocating or temporary removal and replacement shall be accomplished by Contractor. Any relocated utility that is not removed and remains in-place shall be plugged or bulkheaded at its upstream and downstream ends to prevent loss of ground and infiltration of cementitious materials (cement concrete, grout, CLSM, etc.) into the remaining void space and beyond.
- B. It shall be Contractor's responsibility to liaison with all Utility companies, and replacements and relocations shall be completed in compliance with their requirements. In all cases existing utility service shall be maintained until the new lines are completed and ready for use. Homeowners shall have 48-hour prior notice of any interruption of service necessary to affect changeover to the new lines.

- C. Permit Owners of the utilities and their agents access to the site of the work at all times during relocation or protection of their facilities, and cooperate with them in performing this work.
- D. Cooperate with the Utility owners concerned and notify Owner not less than thirty (30) days in advance, unless noted otherwise, of the time scheduled to perform any work that will endanger or affect their facilities.
- E. Any public utility facilities being constructed under this Contract shall be subject to inspection by the Utility owner during construction, and the Utility owner shall be given the opportunity to inspect material to be used in reference to the specifications and plan details applying to such materials.
- F. No additional compensation will be allowed for any delays, inconvenience, or damage sustained by Contractor for the relocation and replacement of permanent and temporary utilities due to interference from said utility appurtenances or the operation of moving them either by the utility company or by Contractor.
- G. Notify Owner at least thirty (30) days in advance of any utility mark out required.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)

SECTION 33 26 50

POLYVINYLCHLORIDE OPEN CUT SEWER PIPE

PART 1- GENERAL

1.1 SUMMARY

- A. Provide and test polyvinylchloride (PVC) pipe as indicated and specified. This Section specifies PVC Sewer Pipe for use in open cut construction.
- B. Perform leakage acceptance test in accordance with approved submittals.
- C. Perform video inspection survey in accordance with approved submittals.

1.2 SUBMITTALS

- A. All products, materials and equipment to be incorporated in the Work shall be submitted as a shop drawing and/or product data as specified in Section 01 33 00 - Submittals.
- B. Leakage Test Program to include procedure, schematic, equipment and layout. This test shall be in accordance with requirements as contained herein.
- C. Video Inspection Survey Program to include procedure, equipment, and coverage. Provide sample video in terms of clarity, quality and coverage.
- D. Testing Log prior to final acceptance. Testing Log to include the results of Leakage Test Program, video, visual inspection, and any other inspections or analyses conducted.

1.3 QUALITY ASSURANCE

- A. Pipes shall be stamped bearing manufacture's name, date, strength of pipe, and applicable ASTM and/or AASHTO numbers.
- B. All materials to be incorporated in the Work shall be tested or inspected in accordance with the following schedule. Sampling, testing and inspection shall be made in accordance with the latest applicable ASTM standards.
- C. Provide labor to assist the Owner in inspecting pipe upon delivery. Remove rejected pipe immediately.
- D. Reject pipe of any manufacturer if more than five unsatisfactory joint assembly operations or "bell breaks" in 100 consecutive joints, even if they conform to ASTM Specifications. Remove all unsatisfactory pipe of that manufacturer of same shipment from work and furnish from another manufacturer conforming to these specifications.

- E. Perform tests in accordance with methods prescribed by ASTM specifications. Accept or reject based on the test results.
- F. After the pipe has been installed, perform a video inspection survey with high resolution equipment to record the condition of the pipe from manhole to manhole. This inspection shall also document the condition of the installed pipeline at each of the pipe joints.
- G. After the pipe has been installed, sewers 48-inch in diameter or larger shall also be subjected to a visual inspection walk through in conjunction with Owner.

1.4 DELIVERY AND STORAGE AND HANDLING

- A. Delivery, Storage, and Handling shall be in accordance with the requirements established elsewhere in these specifications.

1.5 REFERENCES

- A. American Society of Testing and Materials (ASTM), Latest Edition for each standard.
- B. Ohio Department of Transportation (ODOT), "Construction and Materials Specifications", Latest Edition.
- C. "Uniform Standards for Sewerage Improvements", Latest Edition.

PART 2 - MATERIALS

2.1 PVC PIPE, FITTINGS, AND SPECIALS

- A. Pipe and fittings including those required for stubs: ASTM F794. Pipe stiffness (PS): 46 psi minimum.
- B. Provide straight pipe in lengths of 13 ft. maximum, Y-branches in lengths of 3 ft. maximum. Saddle Y-branches NOT ACCEPTABLE.
- C. Provide specials as specified and to meet the specifications for straight pipe insofar as applicable and to the details indicated.
- D. Pipe diameters shall conform to the Ohio EPA's Pipe Specification List (July 7th, 2011) and/or ASTM C-76 whichever is more stringent.
- E. Pipe with diameters of 21-inch through 42-inch shall be dual wall PVC with a smooth interior.

2.2 JOINTS

- A. Joints: Conform to ASTM 3212.

- B. Provide push-on bell and spigot joints with elastomeric ring gaskets.
- C. Provide gaskets conforming to ASTM F477; resistant to common ingredients of sewage and industrial wastes, including oils and groundwater; and capable of enduring permanently under conditions of proposed use. Fix gaskets into place in bells to avoid dislodging during joint assembly.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine excavation before pipe placement to ensure:
 - 1. Excavation complete to elevations and slopes indicated.
 - 2. No obstruction exists to interfere with installation.
 - 3. Bottom firm and dry.
- B. Inspect each pipe and fitting before installation. Remove defective pipe. Replace with sound pipe.

3.2 HANDLING

- A. Store until installation, acceptable to Owner; keep pipe at ambient outdoor temperature.
 - 1. Provide temporary shading.
 - 2. Do not use covering causing temperature build-up.
- B. Handle into position to avoid damage and acceptable to Owner.

3.3 INSTALLATION

- A. Installation and bedding shall be per ASTM 2321.
- B. Do not install non-straight pipe.
 - 1. Do not allow pipe centerline to deviate from straight line drawn between ends, by more than 1/16 in. per ft. of length.
 - 2. Remove pipe failing to meet above requirement.
- C. Support pipe on compacted screened gravel. Do not permanently support on saddles, blocking or stones.
- D. Excavate bell holes so that only pipe barrel receives bearing pressure.

- E. Clear pipe units of debris, dirt, etc. before installation and keep clean until acceptance.
- F. Install to lines and grades indicated.
- G. Maintain close joint with previously installed pipe. Match with adjoining pipe.
- H. Do not drive pipe down to required grade by striking.
- I. Clean joint surfaces. Lubricate bell according to manufacturer's recommendation. Push pipe unit into place without damage to pipe or gasket. Use devices to force pipes together with minimum open recess inside and outside and tightly sealed joints. Avoid force that could wedge apart and split bell ends.
- J. Do not pull or cramp joints without permission of Owner.
- K. Remove unfittable pipes and replace with sound units.
- L. Follow directions of joint material and pipe manufacturers when installing gaskets and joints to render them watertight and flexible.
- M. Close open ends of pipe and branches with PVC stoppers secured in place.
- N. After bedding pipe, place and compact screened gravel between pipe and sides of trench. Use extra care to compact screened gravel under lower half of pipe. Fill bell holes with screened gravel and compact. Place and compact screened gravel as indicated.
- O. Prevent pipe flotation in trench.
- P. Make open ends of pipe and branches watertight with temporary plugs when pipe installation not in progress.
- Q. If water in trench, do not remove plug until provisions made to prevent water, earth, or other substances from entering pipe; then resume work.
- R. Do not use pipeline as conductor for trench drainage.
- S. Cleaning:
 - 1. Prevent earth, water, and other material entering pipeline.
 - 2. Clean pipeline and manholes upon completion.

3.4 ALLOWABLE PIPE DEFLECTION

- A. Allow a maximum deflection of installed pipe of 5.0 percent of base diameter.

- B. Measure deflection after completion of a section including placement and compaction of backfill. Pull a specially designed gage through completed section. Use a gage as recommended by pipe manufacturer and accepted by Owner.
- C. Provide base diameter and gage diameter (diameter of circumscribing circle).

NOMINAL SIZE (IN.)	BASE DIAMETER (IN.)	GAGE DIAMETER (IN.)
6	5.742	5.45
8	7.665	7.28
10	9.563	9.08
12	11.361	10.79
15	13.898	13.20
18	19.969	16.12
21	19.990	18.99
24	22.453	21.33
27	25.280	24.02

- D. Should the installed pipe fail to meet above requirement, do all work to correct problem without additional compensation.

END OF SECTION

(THIS PAGE IS LEFT INTENTIONALLY BLANK)

SECTION 33 32 16

PACKAGED UTILITY WASTEWATER PUMPING STATION

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Install an OWNER furnished, factory-built, underground sewage pump station with submersible chopper non-clog pumps including equipment and materials specified herein. OWNER's supplier furnishes controls, pumps, rail system, and appurtenances as indicated and in compliance with Contract Documents.

1.02 RELATED SPECIFICATIONS:

- A. Section 01 33 00 Submittals
- B. Section 43 21 16 Submersible Chopper Pumps

1.03 REFERENCES:

- A. American Bearing Manufacturers Association (ABMA):
 - 1. Load Ratings and Fatigue Life for Ball Bearings.
 - 2. Load Ratings and Fatigue Life for Roller Bearings.
- B. ASTM International (ASTM):
 - 1. A36: Standard Specification for Carbon Structural Steel.
 - 2. A48: Standard Specification for Gray Iron Castings.
 - 3. A53: Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
 - 4. A576: Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality.
 - 5. A743/A743M: Standard Specification for Castings, Iron-Chromium, Iron-Chromium Nickel, Corrosion Resistant, for General Application.
 - 6. A105: Standard Specification for Carbon Steel Forgings for Piping Applications
 - 7. A126: Standard Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.

8. B16: Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines
 9. B308/B308M-20: Standard Specification for Aluminum-Alloy 6061-T6
 10. B584: Copper Alloy Sand Castings for General Applications
 11. D2240: Standard Test Method for Rubber Property – Durometer Hardness.
- C. American National Standards Institute (ANSI):
1. S1.11: Standard Octave-Band and Fractional-Octave-Band and Digital Filters.
 2. B16.1: Standard for Cast Iron Pipe Flanges and Flanged Fittings, 125 lb.
- D. American Water Works Association (AWWA):
1. C504: Rubber-Seated Valves.
 2. C508: Lever and Weight Swing Checks.
 3. C517: Resilient Seated Cast Iron Eccentric Plug Valves.
- E. Hydraulic Institute (HI):
1. Current Standards.
 2. 11.6: Submersible Pump Tests.
- F. National Electrical Manufacturers Association (NEMA):
1. MG1: Motors and Generators.
- 1.04 SUBMITTALS FROM OWNER’S SUPPLIERS:
- A. The following shop drawings will be furnished to CONTRACTOR:
1. Description of sizes and dimensions of parts of equipment and appurtenances proposed.
 2. Following to serve as aid in understanding:
 - a. Pump station wetwell and access provisions and fabrication details.
 - b. Submittals from Section 43 21 16- Submersible Chopper Pumps.
 3. Shop drawing data for accessory items.

4. Certified pump station general arrangement and setting plans, with tolerances, for anchor bolts.
 5. Manufacturer's literature as needed to supplement certified data.
 6. Field installation instructions.
- B. Control System: Wiring diagrams and schematics for pump control, schematic layout drawings, include elementary wiring diagrams.
1. Factory Test: Results of test conducted.
 - a. Pumping Level Controls: Manufacturer's product information and wiring diagrams.
- C. Piping and Valves: Drawings and manufacturer's literature on plug valves, swing check valves in pump station. Manufacturer's certifications on types of pipe
- D. Data regarding connectors, expansion joints, mechanical couplings, rubber hose, and insulating fittings.
1. Field assembly details.

1.05 QUALITY ASSURANCE FROM OWNER'S SUPPLIER:

- A. Pumps shall be the product of one manufacturer.
- B. Pumps shall be manufacturer's standard cataloged product and modified to provide compliance with the drawings, specifications and the service conditions specified and indicated.
- C. Shop tests as specified.
- D. Supplier shall obtain pumps, motors, and appurtenances from pump manufacturer, as a complete and integrated package to insure proper coordination and compatibility and operation of system.
- E. Services of factory-trained Service Technician, to support the CONTRACTOR as follows:
 1. Service Technician will be present on site for all items listed below. Person-day requirements listed are exclusive of travel time, and do not relieve Contractor of the obligation to place equipment in operation as specified.
 2. Installation: Inspect grouting, location of anchor bolts; setting, leveling, alignment, field erection; coordination of piping, electrical and miscellaneous utility connection.
 - a. 2 person-days

3. Functional Completion Testing: Checking alignment and calibration prior to CONTRACTOR's functional test with water.
 - a. 1 person-days
4. Field Performance Testing: Assisting CONTRACTOR's field performance testing.
 - a. 1 person-days
5. Vendor Training: Classroom and field operation and maintenance instruction including materials, slides, videos, handouts, and preparation to lead and teach classroom sessions.
 - a. 1 person-days

1.06 DELIVERY, STORAGE AND HANDLING:

- A. Transport and handle items in accordance with component manufacturer's printed instructions.
- B. Deliver products to site in manufacturer's original sealed containers or other packing systems with complete instructions for handling, storing, unpacking, protecting, and installing.

1.07 SCOPE OF WORK BY CONTRACTOR:

- A. Offload and Install HDPE Wet Well
- B. Installation of components inside the wetwell as furnished by Pump Station fabricator:
 1. Pumps and pump removal systems.
 2. Piping inside wet well furnished by Pump Station fabricator.
- C. Setting the polymer flattop cover and pump station enclosure.
- D. Electrical conduit and wiring between utility pole and power pedestal.
- E. Invert pipe and force main connection.
- F. Other items not specifically identified in this scope.

PART 2 - PRODUCTS (BY OWNER'S SUPPLIER)

2.01 PUMP STATION FABRICATOR:

- A. Excel Fluid Group LLC (aka "EXCEL" or "EFG").

2.02 PUMP STATION WETWELL AND STATION ENCLOSURE (furnished by pump station fabricator):

A. Wet Well:

1. One 6-foot diameter, 16.5 ft deep monolithic structural HDPE:
 - a. Include inlet hub, anti-flotation flange.
2. One Castinite® polymer concrete flattop with hatch cover for wet well access:
 - a. 18,000 psi compressive strength polymer concrete
 - b. 90-94% high purity quartz aggregate with high strength resin epoxy
 - c. Minimum 84"x84" opening for wetwell access.
 - d. 6"x36" Cable Tray with aluminum slip resistant removable cover designed to house all power cables and serve as the wetwell vent.
3. Aluminum Channel Frame Access Cover for flattop wetwell access opening:
 - a. 300 PSF load rated Lockable dual hatch doors.
 - b. Aluminum "I" bar construction safety grate with orange powder coated finish.
 - c. Tamper-proof stainless steel hinge bolts.

B. Pump Station Aboveground Enclosure and Appurtenances:

1. Aluminum NoVault™ Enclosure:
 - a. Manufacturer / Model #: EXCEL Model # EX-ALNV2.
 - b. External sandstone exterior enclosure covering.
2. Interior piping and controls above wetwell.
3. Insulation.
4. Interior rubber lining.

5. Gull wing access doors.
6. Interior LED lighting.
7. Interior ventilation fan with electric heater.
8. Stowaway Crane Inside Enclosure- see Paragraph 2.04.

2.03 PUMPS (furnished by pump station fabricator)

A. Submersible Chopper Pump (See Section 43 21 16):

1. Two (2) Barnes SITHE Model No. 4XSCDGN Explosion Proof Oil Filled
 - a. Performance Rating Point: 283 gpm @ 46 ft TDH.
 - b. Motor Design: NEMA B, squirrel cage induction, inverter duty rated MG1.
 - c. Motor Frame: 18 Frame.
 - d. Motor Insulation: Class H varnish and magnet wire.
 - e. Motor Power: 230 V, 3 phase, 60 Hertz,
 - f. Motor Service Factor: 1.2.
 - g. Motor Speed: 1750 RPM.
 - h. Discharge: 4-inch, 125 lb. horizontal flange, slotted.
 - i. Striker Plate: 440C stainless steel.
 - j. Wear Ring: C954 lead-free bronze.
 - k. Impeller: enclosed dual-vane, with pump out vanes on back side.
 - l. Cord Entry: custom molded, quick connected for sealing and strain relief.
 - m. Volute: cast iron ASTM-A48 Class 30.
 - n. Motor Housing: cast iron ASTM-A48 Class 30.
 - o. Seal Plate: cast iron ASTM-A48 Class 30.
 - p. Slicing Blade: 440C stainless steel.
 - q. Shaft: 416 stainless steel.

- r. O-Rings: Buna-N.
- s. Hardware: 300 series stainless steel.
- t. Lifting Bail: 300 series stainless steel.
- u. Paint: Axalta™ Corlar® epoxy, two coats.
- v. Seal: tandem, mechanical, oil filled reservoir.
 - (1) inboard: silicon carbide rotating and stationary faces.
 - (2) outboard: silicon carbide rotating and stationary faces.
- w. Upper Bearing: single row, ball, oil lubricated, radial.
- x. Lower Bearing: double row, ball, oil lubricated, radial, and thrust.
- y. Three phase requires overload protection included in control panel.
- z. Moisture Sensor: normally open (N/O) requires relay in control panel.
- aa. Temperature Sensor: Three normally closed (N/C) thermal cutout switches wired in series w/control.

2.04 PUMP MOUNTING & REMOVAL SYSTEM (furnished by pump station fabricator):

A. Barnes Submersible Chopper Pump Components: (See Section 43 21 16)

- 1. Barnes Base Elbow Assembly for Pumps.
- 2. Barnes Moveable Slide Bracket.
- 3. Barnes Upper & Intermediate Guide Rail Bracket.

B. Guide Rails and Lift Chains:

- 1. Four (4) 2-inch 304SS guide rails.
- 2. Two (2) stainless steel lifting chains.

C. Stowaway Crane Lifting Hoist Inside Pump Station Enclosure:

- 1. Steel construction.
- 2. 120VAC Electric winch rated for 800 lbs.
- 3. Remote handheld pendulum and manual hand crank.

4. 1/4-inch stainless steel cable with galvanized safety hook.
- 2.05 ELECTRIC POWER PEDESTAL (furnished by pump station fabricator):
- A. Electric Meter Base:
 1. Milbank 230V- single phase electric meter base.
 - B. Main Disconnect:
 1. Includes lightning arrestor and TVSS phase monitor.
- 2.06 PUMP CONTROLS (furnished by pump station fabricator):
- A. Supplier: EXCEL Fluid Group:
 1. Model: "ARC-Sentry" Duplex Control Panel customized for City of Elyria.
 2. Arc flash shielding design.
 3. Constant torque variable frequency drives for phase conversion from single phase to three phase.
 4. City of Elyria standard for level control: TIME MARK Pump-Down Controller.
 5. Includes auxiliary 6A dry contacts with dry contact radio programming by City of Elyria:
 - a. 4-20 mA level output
 - b. 4-20 mA flow output
 - c. Door Open
 - d. Low Water Level
 - e. High Water Level
 - f. Pump 1 Running
 - g. Pump 2 Running
 - h. Pump 1 Overtemp
 - i. Pump 2 Overtemp
 - j. Pump 1 Seal Fail

- k. Pump 2 Seal Fail
 - l. Drive 1 Fault
 - m. Drive 2 Fault
 - n. Lead Pump Fail
 - o. Backup Level Control ACTIVE
 - p. Automatic Transfer Switch: ENGAGED
 - q. Generator Running
 - r. Radio & programming by City of Elyria; shipped to EFG for install in panel
- 6. Enclosure: NEMA 12 steel.
 - 7. UL Listed.
 - 8. Electrically interlocked door and low voltage compartment with all operator controls.
 - 9. Labeled, coded, wiring diagram with field wiring and torque specifications clearly identified.
- B. Breakers:
- 1. Thermal magnetic air circuit for branch disconnect service and short circuit protection of motor control and auxiliary circuits.
 - 2. Overcurrent protection device in addition to branch circuit breaker, or impedance protect for each motor.
- C. Variable Frequency Drives:
- 1. Sized for 230 VAC / 60 Hertz single phase input and three phase output.
 - 2. Manufacturer: Allen Bradley – BASE BID.
 - 3. Constant Torque.
- D. Pump Controller:
- 1. Manufacturer: TIME MARK Corporation.
 - 2. Model: 4052 Pump Down Controller.

E. Level Sensor:

1. Wired radar level sensor for continuous level measurement.
2. Manufacturer/Model: VEGA VEGAPULS C21.
3. Specifications:
 - a. Standard PVDF body and wetted parts.
 - b. Standard Ambient Temp: -40 degrees F to 176 degrees F.
 - c. Standard Beam Angle: 8 degrees.
 - d. FM approval: Class 1 Div 1 explosion protection.
 - e. 1-1/2 inch NPT process side / 1 inch NPT cable side.
 - f. Two-wire 4-20 mA electronics.
 - g. Mounting bracket selection as determined by pump station fabricator.

F. Back up Float Switches:

1. Manufacturer: EFG # 4000020 or Flygt ENM-10.
2. Type: non-mercury, normally open, microswitch in polypropylene body
 - a. 4 switches will control operation of pumps with variations of sewage level in wet well.
 - b. One (Fourth) switch will provide 2 remote high level alarm contacts.
3. Size: less than 3 inch x inch 5.
4. Material: Polypropylene.
5. UL Listed:
 - a. Locate cord grips approximately 8 in. below wet well access manway cover to provide for visual inspection and adjustment of displacement switches.
6. Float switches and safe fail units suitable for Class I, Division 1 service.
7. Minimum of 25 ft of multi stranded, corrosion resistant vinyl jacket cord with each switch to eliminate splicing.
8. Stainless steel float bracket.

G. Amp Meter:

1. Internal to Variable Frequency Drive.
2. Built in damping to avoid damage during in rush current.
3. Over scale protection to avoid damage if locked rotor current occurs.

H. Automatic Operator:

1. Manual on off switch to change sequence of pumps every 8 hrs.

I. Includes provisions for pumps to operate in parallel if level in wet well continues to rise above starting level for low level "lead" pump.

J. Alarm Light:

1. RED flashing to indicate "High Wet Well".
2. Weatherproof bracket fixture, complete with lamp and globe guard, suitable for conduit mounting.

K. Radio Communications:

1. Components furnished/programmed by City of Elyria for EFG to install in Control Panel.
2. ELPRO 905 U Wireless Multi-I/O Transmitter and Receiver:
 - a. Power supply: 12-24 Vac/15-30 Vdc
 - b. Average current draw: 85 mA @ 12 Vac.
 - c. Transmit current draw: 350 mA @ 13.8 Vdc; 250 mA @ 24Vdc
 - d. Size: 5.1" x 7.3" x 2.4".
 - e. Housing/Mounting : extruded aluminum / DIN rail.
 - f. Weight: 2.2 lbs.
 - g. Frequency:
 - (1) 865-867 Mhz.
 - (2) 902-928 Mhz.
 - (3) 915-928 Mhz.

- h. Transmit Power: 1 W.
 - i. Range: 20 miles @ 4W ERIP.
3. ELPRO 115S I/O Expansion Port:
- a. Size: 5.91" x 7.09" x 1.38".
 - b. Housing/ Mounting: high temperature polycarbonate; DIN rail mount.
 - c. Weight; 1.1 lbs.
- 2.07 PUMP STATION PIPING AND VALVES (furnished by pump station fabricator):
- A. Piping:
- 1. Discharge Line:
 - a. 4-inch HDPE rated for system test pressure.
 - b. Fit check valve and eccentric plug valve and magmeter; EFG design.
 - c. Furnish HDPE pipe supports.
 - 2. Discharge pipe shall exit station through side and fusion weld to HDPE shell.
- B. Valves:
- 1. Plug Valves:
 - a. Manufacturer/Model:
 - (1) Milliken Ballcentric.
 - b. Furnish operating wrench for plug valves.
 - 2. Check Valves:
 - a. Manufacturer/Model:
 - (1) GA Industries GA-Figure 340D Lever & Weight Swing Check.
 - b. Spring loaded type with external lever arm and resilient seat for added assurance against vacuum leaks. Cast iron body, stainless steel shafts and bronze shaft sleeves.
- 2.08 MAGNETIC FLOWMETER (furnished by pump station fabricator):
- A. Manufacturer/ Model: SIEMENS Sitrans located per system drawing layout.

B. Size 4-inch.

C. Specifications:

1. Electrode: bullet nose
2. Liner Material: Teflon
3. Electrode Material: 316 LSS
4. Flange Material: 304 SS
5. Flange Rating: ANSI 150
6. Grounding Rings: 316L SS
7. Remote Field Mount Transmitter: 4-20mA
8. Transmitter power supply specification by Control Supplier

2.09 STANDBY POWER SYSTEM (furnished by pump station fabricator):

A. Natural Gas Generator

1. Manufacturer:
 - a. Kohler (BASE BID)
 - b. Generac
2. 230V, single phase, sized for power requirement of station.
3. Furnish sheet metal enclosure, block heater and battery charger.

B. Automatic Transfer Switch

1. Furnish with dry contacts for communication system.

2.10 WIRING :

A. Field Wiring requirements noted in schematics from Pump Station fabricator.

PART 3 - EXECUTION BY CONTRACTOR

3.01 INSTALLATION REQUIREMENTS

A. Wet Well

1. Offload and install HDPE wet well and polymer flat top.

B. Components Inside Wet Well

1. Install all components inside the wet well as furnished by pump station fabricator.
2. Install piping inside the wet well as furnished by pump station fabricator.
3. Furnish and install invert pipe and force main connection from exterior to wet well.

C. Aluminum Enclosure

1. Off load and set enclosure after installing flat top on wet well.

D. Coordinate Electric Service hook up by Power Company.

E. Electrical Installation

1. Provide field wiring of pumps and controls.
2. Provide field wiring between utility pole and power pedestal

3.02 FIELD TESTING

A. Test piping connections to prove the pump nozzle are installed with pipe in a free supported state and without need to apply vertical or horizontal pressure to align piping with pump nozzles. This must be performed and piping acceptable prior to any field performance testing.

B. Field testing shall not be conducted without an accepted procedure, calibration certificates for all testing equipment, gauges and flow meters and a completed and signed pretesting check list. See Division 1 for checklist.

C. After installation of pumping equipment, and after inspection, operation, testing and adjustment have been completed by manufacturer's field service technician, conduct running test for each pump in presence of the City of Elyria to determine its ability to operate within vibration and temperature limits specified, and to deliver its rated capacity under specified conditions.

1. During tests, observe and record head, capacity, pump bearing housings and motor bearing temperature, noise and vibration and motor inputs.
 - a. Provide vibration signature test data for each pump and drive assembly.
 - (1) Limit: 50 percent of ANSI/HI allowable limits.
 - b. Bearing Temperature: Bearing temperature not to exceed 180 degrees F.

- c. Test Duration: Not less than four hours of continuous operation at each condition specified and indicated.
 - 2. Run pump skid for minimum four hours prior to taking temperature readings of pumps, motors, and shafting.
 - 3. Immediately correct or replace all defects or defective equipment revealed by or noted during tests at no additional cost to the Owner.
 - 4. Repeat tests until specified results are obtained.
 - 5. Contractor to provide all water labor, piping, testing equipment, equipment, flow meters and test gauges for conducting tests.
 - a. Contractor shall provide calibrated test gauges for all permanently installed gauges and portable calibrated flow meters for all pumping systems even in those cases where permanent flow meters are installed.
 - b. All calibrations must be within 30 days of the field testing.
 - c. Testing will not be started and will not be accepted until calibrated testing equipment stated above is operational and all certifications have been submitted.
 - D. Make all adjustments necessary to place equipment in specified working order at time of above tests.
 - E. Test pump on wastewater only. If wastewater is not available, test with water. Water for testing furnished by Contractor in coordination with City of Elyria.
 - F. Furnish new equipment that will meet all requirements specified and indicated if unable to demonstrate to satisfaction of City of Elyria, that equipment will perform service specified, indicated, and as submitted .
- 3.03 FIELD TOUCH-UP PAINTING (CONTRACTOR):
- A. After installation and testing accepted by City of Elyria apply touch-up paint to all scratched, abraded, and damaged shop painted surfaces. Coating type and color shall match shop painting.

END OF SECTION

SECTION 40 23 19.05

PROCESS PIPING AND APPURTENANCES

PART 1 - GENERAL

1.01 DESCRIPTION:

- A. Provide and test process piping and appurtenances as indicated and in compliance with Contract Documents.

1.02 REFERENCES:

- A. American Society of Mechanical Engineers (ASME):

1. B16.1: AN Standard for Cast Iron Pipe Flanges and Flanged Fittings, Class 25, 125, 250 and 800
2. B16.3: Malleable Iron Threaded Fittings Classes 150 and 300
3. B16.5: AN Standard for Pipe Flanges and Flanged Fittings, Steel Nickel Alloy and Other Special Alloys
4. B16.9: Factory-Made Wrought Buttwelding Fittings
5. B16.15: Standard for Cast Bronze Threaded Fittings, 125 and 250 lb
6. B16.18: Standard for Cast Copper Alloy Solder-Joint Pressure Fittings
7. B16.22: Standard for Wrought Copper and Bronze Solder-Joint Pressure Fittings
8. B16.26: Standard for Cast Copper Alloy Fittings for Flared Copper Tubes
9. B31.1: Power Piping

- B. ASTM International (ASTM):

1. A36: Standard Specification for Carbon Structural Steel
2. A47: Standard Specification for Ferritic Malleable Iron Castings
3. A53: Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
4. A105: Standard Specification for Carbon Steel Forgings for Piping Applications
5. A139: Standard Specification for Electric-Fusion (Arc)-Welded Steel Pipe (NPS 4 and Over)

6. A181: Standard Specification for Carbon Steel Forgings, for General-Purpose Piping
7. A193: Standard Specification for Alloy-Steel and Stainless Steel Bolting for High Temperature or High Pressure Service and Other Special Purpose Applications
8. A194: Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
9. A197: Standard Specification for Cupola Malleable Iron
10. A216: Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High Temperature Service
11. A240: Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
12. A256: Standard Method of Compression Testing of Cast Iron
13. A269: Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
14. A278: Standard Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 650°F (350°C)
15. A307: Standard Specification for Carbon Steel Externally Threaded Standard Fasteners
16. A312: Seamless and Welded Austenitic Stainless Steel Pipe
17. A351: Standard Specification for Castings, Austenitic, for Pressure-Containing Parts
18. A449: Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
19. A536: Ductile Iron Castings
20. B62: Standard Specification for Composition Bronze or Ounce Metal Castings
21. B75: Specification for Seamless Copper Tube
22. B88: Specification for Seamless Copper Water Tube
23. C177: Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus
24. C1136: Standard Specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation

25. D256: Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
26. D570: Standard Test Method for Water Absorption of Plastics
27. D638: Standard Test Method for Tensile Properties of Plastics
28. D696: Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between -30 Degree C and 30 Degree C with a Vitreous Silica Dilatometer
29. D790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
30. D792: Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
31. D1330: Standard Specification for Rubber-Sheet Gaskets
32. D1457: Standard Specification for Polytetrafluoroethylene (PTFE) Molding and Extrusion Materials
33. D1599: Standard Test for Short-Time Rupture Strength of Plastic Pipe, Tubing and Fittings
34. D1784: Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds
35. D1785: Standard Specification for Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Plastic Pipe, Schedules 40, 80 and 120
36. D2000: Rubber Products in Automotive Applications
37. D2105: Standard Test for Longitudinal Tensile Properties of Reinforced Thermosetting Plastic Pipe and Tube
38. D2412: Standard Test for External Loading Properties of Plastic Pipe by Parallel-Plate Loading
39. D2467: Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80
40. D2564: Standard Specification for Solvent Cements for Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Plastic Pipe and Fittings
41. D2855: Standard Practice for Making Solvent Cemented Joints with Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Pipe and Fittings

42. D2996: Filament-Wound "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe
43. D3035: Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
44. D3222: Standard Specification for Unmodified Polyvinylidene Fluoride (PVDF) Plastic-Lined Ferrous Metal Pipe and Fittings
45. D3350: Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
46. D5685: Standard Specification for "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pressure Pipe Fittings
47. E84: Standard Test Method for Surface Burning Characteristics of Building Materials
48. F441: Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80
49. F491: Standard Specification for Polyvinylidene Fluoride (PVDF) Plastic-Lined Ferrous Metal Pipe and Fittings
50. F593: Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
51. F1476: Standard Specification for the Performance of Gasketed Mechanical Couplings for Use In Piping Applications.

C. American Welding Society (AWS):

1. B3.0: Welding Procedure and Performance Qualification

D. American Water Works Association (AWWA):

1. C213: Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines
2. C219: Bolted, Sleeve-Type Couplings for Plain-End Pipe
3. C606: Grooved and Shouldered Joints

F. Expansion Joint Manufacturers Association Standards.

G. Fluid Sealing Association - Technical Handbook.

H. Manufacturer's Standardization Society (MSS):

1. SP-67: Butterfly Valves

2. SP-69: Pipe Hangers and Supports - Selection and Application

1.03 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00:

1. Submit manufacturer's certificates of conformance.
2. Submit certified copies of test reports.
3. Piping layouts in full detail.
4. Location of pipe hangers and supports.
5. Large scale details of wall penetrations and fabricated fittings.
6. Schedules of all pipe, fittings, special castings, flexible connectors, adapters, couplings, expansion joints, and other appurtenances.
7. Reports as required for welding certifications per ASME B31.1 Paragraph 127.6.
8. Catalog cuts of joints, couplings, harnesses, expansion joints, gaskets, fasteners and other accessories.

B. Grooved joint couplings and fittings: Provide product submittals with products specifically identified by the manufacturer's style or series designation.

1. Brochures and technical data on coatings and linings and proposed method for application and repair.
2. Manufacturer's descriptive literature and technical data on insulation and proposed method of installation.
3. Shop drawing data for accessory items.
4. Manufacturer's literature as needed to supplement certified data.
5. Operating and maintenance instructions and parts lists.
6. Schematic control and power wiring diagrams.
7. Shop and Field inspections reports.
8. List of recommended spare parts other than those specified.
9. Recommendations for short and long term storage.
10. Special tools.

11. Shop and field testing procedures and equipment to be used.
 12. Provide a listing of the materials recommended for each service specified and indicated. Provide documentation showing compatibility with process fluid and service specified and as indicated.
 13. The latest ISO 9001 series certification or quality system plan.
 14. Material Certification:
 - a. Provide certification from the piping and equipment manufacturers that the materials of construction specified are recommended and suitable for the service conditions specified and as indicated. If materials other than those specified are proposed based on incompatibility with the service conditions, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified. And indicated including an installation list of a minimum of five (5) installations in operation for a minimum of five (5) years. Provide proposed materials at no additional cost to the Authority.
 - b. Where materials are not specified, provide technical data and certification that the proposed materials are recommended and suitable for the service conditions specified and indicated.
- C. A copy of the contract mechanical process, civil, structural, electrical and instrumentation drawings, with addenda that are applicable to the equipment specified in this section, marked to show all changes necessary for the equipment proposed for this specification section. If no changes are required, mark all drawings with “No changes required”.
1. Failure to include all drawings applicable to the equipment specified in this section will result in submittal return without review.
- D. A copy of this specification section with addenda and all referenced specification sections with addenda, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations and clarifications from the specified requirements.
1. If deviations and clarifications from the specifications are indicated, therefore requested by the Contractor, provide a detailed written justification for each deviation and clarification.
 2. Failure to include a copy of the marked-up specification sections and or the detailed justifications for any requested deviation or clarification will result in submittal return without review until marked up specification and justification are resubmitted with the entire package.

1.04 QUALITY ASSURANCE:

A. Welder Qualifications:

1. Qualify and certify welding procedures, welders, and operators in accordance with ANSI B31.1, for shop and project site welding of piping work.
 2. Qualification for welders: Welding shall be performed by welders holding current certification for the welding procedures in use.
 3. Visually inspect welding while the operators are making the welds and again after the work is completed. After the welding is completed, hand or power wire brush welds and clean them before the inspector makes the check inspection. Inspect welds for defects exceeding tolerances allowed by code under which the weld was made. Repair all defects exceeding tolerance.
- B. Provide all grooved joint couplings, fittings, valves, and specialties to be the products of a single manufacturer. Grooving tools used must be of the same manufacturer as the grooved components.
1. Provide all castings used for coupling housings, fittings, and valve bodies date stamped for quality assurance and traceability.
- C. Job Conditions:
1. Coordinate dimensions and drillings of flanges with flanges for valves, pumps, and other equipment to be installed in piping system.
- 1.05 DELIVERY, STORAGE AND HANDLING:
- A. Provide in accordance with Section 01 66 10.
- B. During loading, transportation and unloading, prevent damage to pipes and coatings. Load and unload each pipe under control at all times. Under no circumstances will a dropped pipe be used unless inspected and accepted by CM. Place skids or blocks under each pipe in the shop and securely wedge pipe during transportation to protect pipe, lining, and coating.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE AND FITTINGS:

- A. Not used.

2.02 STEEL PIPE AND FITTINGS 10-INCH (250 MM) AND SMALLER:

- A. Not used.

- 2.03 STEEL PIPE 12-INCH (300 MM) AND LARGER:
- A. Not used.
- 2.04 STAINLESS STEEL PIPE AND FITTINGS 2-1/2-INCH (65 MM) AND LARGER:
- A. Not used.
- 2.05 STAINLESS STEEL PIPE AND FITTINGS 1/2-INCH (13 MM) TO 2-INCH (50 MM):
- A. Not used.
- 2.06 CPVC PIPE AND FITTINGS:
- A. Not used.
- 2.07 PVC PIPE AND FITTINGS:
- A. See specification 33 26 50.
- 2.08 PVC CLEAR PIPE AND FITTINGS:
- A. Not used.
- 2.09 HDPE PIPE AND FITTINGS:
- A. Manufacturers:
 - 1. Independent Pipe Products
 - 2. J-M Manufacturing
 - B. Provide ductile iron pipe size high density polyethylene pipe and fittings.
 - 1. Size range: 4-inch (100 mm) to 30-inch (750 mm).
 - 2. Working Pressure: 160 psi (1115 kPa).
 - 3. Joints:
 - a. Butt heat fusion.
 - b. Flanged: Provide at all equipment, valves, tanks and wall penetrations.
 - 4. Flanged Connections: Van Stone type with HDPE flange and bolt ring as specified.
 - a. Bolt Torque: Install in accordance with Plasric Pipe Institute, Inc Technical Note #38.
 - 5. Fittings:

- a. 90 Degree Bends: Provide 5 piece HDPE segmented elbows.
- b. 45 Degree Bends: Provide 3 piece HDPE segmented elbows.
- c. Concentric Reducers: HDPE three section traditional type design, compact reducers are not acceptable.
- d. For pump suction eccentric reducers provide flanged glass lined ductile iron or flanged Type 316L stainless steel as indicated.
- e. Provide stiffeners where required.

C. Materials:

- 1. Pipe and Fittings: Material designation PE4710 in accordance with ASTM D3035 or PE3048 in accordance with ASTM D3350.
- 2. Bolt Rings: Type 316 stainless steel ASTM A531 Grade CF8M.
- 3. Hardware: Type 316 stainless steel.

2.10 COPPER PIPE AND FITTINGS:

- A. Not used.

2.11 FRP PIPE AND FITTINGS:

- A. Not used.

2.12 BASALT LINE ABRASION RESISTANT PIPE AND FITTINGS:

- A. Not used.

2.13 URETHANE PIPE AND FITTINGS:

- A. Not used.

2.14 TITANIUM PIPE AND FITTINGS:

- A. Not used.

2.15 PVDF PIPE AND FITTINGS:

- A. Not used.

2.16 PVDF LINED STEEL PIPE AND FITTINGS:

- A. Not used.

- 2.17 CHEMICAL TUBING AND FITTINGS:
 - A. Not used.
- 2.18 CLEANOUTS-STAINLESS STEEL:
 - A. Not used.
- 2.19 CLEANOUTS-DUCTILE IRON:
 - A. Not used.
- 2.20 PRESSURE GAUGES:
 - A. Not used.
- 2.21 PRESSURE AND FLOW INSTRUMENTATION:
 - A. Not used.
- 2.22 WATER PRESSURE REGULATORS 1/2-INCH THROUGH 1-INCH (15 THRU 25 MM):
 - A. Not used.
- 2.23 COUPLINGS-SLEEVE TYPE:
 - A. Not used.
- 2.24 COUPLINGS-BOLTED SPLIT SLEEVE TYPE:
 - A. Not used.
- 2.25 EXPANSION JOINTS-ELASTOMERIC FLEXIBLE CONNECTION:
 - A. Not used.
- 2.26 EXPANSION JOINTS-STAINLESS STEEL:
 - A. Not used.
- 2.27 EXPANSION JOINTS-CHEMICAL SERVICE:
 - A. Not used.
- 2.28 SAFETY SHIELDS-CHEMICAL SERVICE:
 - A. Not used.

- 2.29 FLOW RATE INDICATORS:
 - A. Not used.
- 2.30 HOSE, HOSE FITTINGS AND ACCESSORIES:
 - A. Not used.
- 2.31 CHEMICAL HOSE AND FITTINGS:
 - A. Not used.
- 2.32 Y-PATTERN STRAINERS-CLEAR NON METALLIC:
 - A. Not used.
- 2.33 Y-PATTERN STRAINERS-METALLIC:
 - A. Not used.
- 2.34 BASKET STRAINERS-CHEMICAL SERVICE:
 - A. Not used.
- 2.35 INLINE SELF-CLEANING STRAINERS:
 - A. Not used.
- 2.36 WALL AND FLOOR SLEEVES:
 - A. Not used.
- 2.37 PIGS, LAUNCHERS AND CATCHERS:
 - A. Not used.
- 2.38 HYDRAULIC OIL SYSTEMS – PIPE AND FITTINGS:
 - A. Not used.
- 2.39 TRANSITION COUPLINGS:
 - A. Not used.
- 2.40 DISMANTLING JOINTS:
 - A. Not used.

2.41 INSULATION:

- A. Not used.

2.42 STAINLESS STEEL HOSE AND FITTINGS:

- A. Not used.

2.43 SEAL WATER CONTROL AND MONITORING UNIT:

- A. Not used.

2.44 CHEMICAL INJECTORS:

- A. Not used.

2.45 SHOP PAINTING:

- A. Not used.

PART 3 - EXECUTION

3.01 INSTALLATION OF PIPE:

- A. Install pipelines parallel to building walls wherever possible. Install piping to lines and grades indicated and support. Where temporary supports are used, provide temporary supports as specified in Section 40 23 19.01 to prevent shifting or distortion of pipe. Provide for expansion.
- B. Slope piping toward low points and provide for draining at low points.
- C. Before assembly, remove debris from inside pipes and fittings.
- D. Before flanges pieces are assembled, remove rust resistant coating from machined surfaces, clean gaskets and smooth burrs. Make up flanged joints tight, and prevent strain upon valves or other pieces of equipment.
 - 1. Bolt threads must fully engage the nuts. At a minimum the bolt must be flush with the nut and no more than 1/2-inch (15 mm) excess thread protruding from the nut.
- E. Install grooved joints in accordance with the manufacturer's written recommendations.
 - 1. Grooved ends: Clean and free from indentations, projections, or roll marks.
 - 2. Gaskets: Molded and produced by the coupling manufacturer of an elastomer suitable for the service specified and indicated.

3. The coupling manufacturer's factory trained representative shall provide on-site training for the contractor's field personnel in the use of grooving tools and installation of product. The representative shall periodically visit the job site to ensure best practices in grooved product installation are being followed.
- F. Install tierods, pipe clamps or bridles when sleeve type couplings or fittings are used in piping system as indicated, and at changes in direction or other places to prevent joints from pulling apart under pressures indicated in the Process Pipe Schedule.
 - G. Examine pieces for damage. Do not install pieces that are damaged according to CM. If any damaged piece should be discovered after having been installed, remove and replace with a sound piece at no additional cost to the Authority.
 - H. Handle pipe with equipment such as nylon slings and padded skids, designed to prevent damage to the coating. Repair abrasions and injuries to the coating prior to the application of insulation or prior to the application of final field coating.
 - I. Support piping laid in trenches in trench on bed of selected backfill material which maintains desired line and grade.
 - J. Use dielectric bushings or unions when ferrous pipes join nonferrous pipes carrying liquid either underground or elsewhere.
 - K. Welding in accordance with AN Standard B31 and AWS B3.0.
- 3.02 WALL SLEEVE SEALS:
- A. Expand rubber against pipe and sleeve by tightening bolts when assembled around pipe and inserted in wall.
- 3.03 TEMPORARY PLUGS:
- A. Close open ends of pipe with temporary plugs or caps when pipe installation is not in progress. Use watertight plugs for exterior, buried piping and if water or debris is in trench when work is resumed, do not remove until adequate provision has been made to prevent any water or debris entering pipe even if it necessitates dewatering trench.
- 3.04 PHYSICAL CHECKOUT, FIELD AND FUNCTIONAL TESTING:
- A. Clean dirt, dust, oil, grease and other foreign material, before pressure and leakage tests.
 - B. Water for testing provided by the Contractor.
 - C. Pressure and Leakage Tests:
 1. Provide temporary testing plugs or caps; pressure pumps, pipe connections, meters, gages, equipment, and labor.
 2. Test pipelines in sections of acceptable length.

3. Fill section of pipe with water and expel air.
 4. Pressure and leakage test consists of first raising pressure (based on elevation of lowest point of section under test and corrected to gage location) to pressure in psi numerically equal to test pressures indicated in the Process Pipe Schedule.
 5. No visible leakage in joint is acceptable.
 6. If unable to achieve and maintain specified pressure for one hour with no additional pumping, section has failed to pass test.
 7. If section fails pressure and/or leakage test, locate, uncover, and repair or replace defective pipe, fitting, or joint, and conduct additional tests and repairs until section passes test at no additional cost and without any time extensions.
- D. Make piping connections to equipment with pipe in a free supported state and without application of vertical or horizontal forces to align piping with the equipment flanges.
- E. Do not cover joints in underground piping with backfill material until piping has successfully passed pressure test.
- F. Test pressures as indicated in Process Pipe Schedule.
- G. Repair faulty joints even to extent of disassembling and remaking joint, remove defective pipe and fittings and replace in manner satisfactory to the Owner.
- 3.05 FIELD PAINTING:
- A. Not used.
- 3.06 CONTRACT CLOSEOUT:
- A. Provide in accordance with Section 01 77 00.

END OF SECTION

SECTION 43 21 16

SUBMERSIBLE CHOPPER PUMP INSTALLMENT

PART 1 – GENERAL

1.01 SUMMARY:

- A. This section addresses installation of submersible chopper pumps for assembly in packaged utility wastewater pumping station.
- B. CONTRACTOR shall provide labor, materials, tools, equipment, and incidentals as shown, specified, and required to install and test submersible chopper pumps which are to be furnished by City of Elyria packaged pump station fabricator as shown on Plans and as described in Specifications.
- C. WORK BY OTHERS: Pump manufacturer scope of supply:
 - 1. Explosion proof motors.
 - 2. Power and sensor cable.
 - 3. Bearings.
 - 4. Mechanical seals.
 - 5. Volutes.
 - 6. Impellers.
 - 7. Pump shafts.
 - 8. Striker plate.
 - 9. Slicing blade.
 - 10. Other pump component parts.
 - 11. Technical services.
- D. CONTRACTOR scope of supply: Provide materials, equipment, appurtenances, and services not supplied as part of system, including but not limited to:
 - 1. Unloading, storing, and protecting equipment at site in accordance with supplier's recommendations.
 - 2. Installation of packaged utility wastewater pumping station.

- E. Related requirements
 - 1. Materials and Equipment
 - 2. Starting of System
 - 3. Painting
 - 4. Sequence of Operation
 - 5. Electrical General Requirements
 - 6. Basic Electrical Materials and Methods
 - 7. Motor Control Panel

1.02 RELATED SECTIONS:

- A. Section 01 33 00 Submittals.
- B. Section 33 32 16 Packaged Utility Wastewater Pumping Station Installation.

1.03 REFERENCES:

- A. Publications listed below form a part of this specification to extent referenced. Publications are referred to in text by basic designation only. Referenced publications shall be current effective edition:
 - 1. American Bearing Manufacturers Association (ABMA).
 - 2. American Iron and Steel Institute (AISI).
 - 3. American Society of Mechanical Engineers (ASME)/American National Standards Institute (ANSI).
 - a. B16.1 Gray Iron Pipe Flanges and Flanged Fittings.
 - 4. ASTM International:
 - a. A48/A48M – 03 Standard Specification for Gray Iron Castings.
 - b. A470 Standard Specification for Vacuum-Treated Carbon and Alloy Steel Forgings for Turbine Rotors and Shafts.
 - 5. Hydraulic Institute Standards (HI).
 - 6. Insulated Cable Engineers Association (ICEA).

7. Institute of Electrical and Electronics Engineers (IEEE).
8. National Electric Code (NEC).
9. National Electrical Manufacturers Association (NEMA).

1.04 SUBMITTALS (from OWNER's Supplier)

A. Pump submittals:

1. Manufacturer shall supply standard submittal, consisting of:
 - a. Pump Catalog Data, including a certified performance curve showing pumps meet indicated and specified requirements for head, capacity, horsepower, efficiency, and NPSH3.
 - b. Pump dimensional drawing.
 - c. Materials of construction list.
 - d. Mounting Accessory details
 - e. Typical installation drawing.
 - f. Electrical schematics and diagrams.
 - g. Certified copies of test data from factory testing when specified, only after pumps have been ordered and manufactured.

B. Informational Submittals:

1. Descriptive information on material and equipment furnished.
2. Anchorage requirements.
3. Installation instructions.
4. Manufacturer's certificate of acceptance of installation and testing.
5. List of manufacturer's recommended spare parts.
6. Installation and Operation Manual with parts list.
7. Warranty documents.
8. Name and address of factory authorized service facility.

1.05 RECEIVING, OFFLOADING, AND HANDLING:

- A. Receive, offload, and handle items from Owner’s pump station fabricator in accordance with component manufacturer’s printed instructions.

PART 2 – PRODUCTS (furnished by OWNER’s Supplier)

2.01 MANUFACTURER:

- 1. Crane Barnes SITHE Pump

2.02 PRODUCT DETAILS:

A. Service Conditions:

- 1. Pumps will be submersible end suction centrifugal chopper type, installed in Wet Pit submersible installation, with a permanently installed guide rail system, with a slide that automatically connects to discharge piping when lowered into place. Pump will be suitable for submergence depth of 66 feet (this application is 11.5 feet submergence).
- 2. Each pump will be capable of handling raw, unscreened domestic sewage consisting of water and fibrous materials. Impellers will be capable of passing up to 3-inch diameter spherical solids without chopping mechanism. Chopping mechanism will modify solids prior to reaching impeller inlet. Pump (s) shall be driven by a submersible motor capable of operating in a 40 degrees C/104 degrees F environment and handling liquids with temperatures to 40 degrees C/104 degrees F continuously. Motor will be capable of operating continuously when fully submerged, and intermittently when partially submerged.
- 3. Each pump will be capable of following performance:

Primary Flow	283	US GPM
Primary Head	46	TDH - Feet
Minimum Hydraulic Efficiency		%
Secondary Flow		US GPM
Secondary Head		TDH - Feet
Tertiary Flow		US GPM
Tertiary Head		TDH - Feet
Discharge Size	4	In
Suction Size		In
Motor Speed	1750	RPM
Motor HP	7.5	HP
Frequency	60	Hz
Voltage	230	V
Phase	3	ph

Motor Service Factor	1.2	SF
----------------------	-----	----

2.03 PUMP AND MOTOR MATERIALS:

A. Component Materials:

Volute	ASTM A48 Class 30 Cast Iron
Impeller	Standard: ASTM A536, 65-45-12 Ductile Iron Optional: ASTM A532 Class III Type A White Iron
Slicing Blade	ASTM A276 440C Stainless Steel, Heat Treated to 53-60 HRC
Striker Plate	ASTM A276 440C Stainless Steel, Heat Treated to 53-60 HRC
Motor Housing	ASTM A48 Class 30 Cast Iron
Wear Ring	ASTM B505 C95400 Lead Free Bronze
External Hardware	304 Stainless Steel
Lifting Bail	304 Stainless Steel
Shaft	416 Stainless Steel
Cooling Jacket	304 Stainless Steel
Seals	Silicon Carbide/Silicon Carbide/Buna Upper Seal, Tungsten Carbide/Tungsten Carbide/Buna for both Upper and Lower Seals
Coating	Two coats of Axalta Corlar® amidoamine epoxy, 10 mil minimum thickness, in manufacturer's standard color
Gaskets	Buna-N
O-Rings	Buna-N
Motor Rotor Bars	Die Cast Aluminum
Elastomeric plug holding plate	ASTM A48 Class 30 Cast Iron
Cable Entry Housing	ASTM A48 Class 30 Cast Iron
Nameplate	304 Stainless Steel

B. Pump Components:

1. Pump end components will be ASTM A48 Class 30 Cast Iron, aside from impeller. Volute shall be a single piece non-concentric design, with smooth passages of sufficient size to pass solids that may enter through impeller. Volute discharge connection will be a standard 125 lb. flange, slotted to accommodate ANSI or MM ISO Flanges used in sewage applications, and will be a centerline connection.
2. Slicing blade-impeller assembly will be dynamically balanced to ISO G6.3 specifications, and capable of handling solids, fibrous materials, and other matter typically found in raw wastewater. Impeller will be keyed to shaft and will have a taper lock connection. Impeller will be:

- a. Dual-vane design with pump out vanes on both sides. Matching volute will include a replaceable volute wear ring at inlet. Larger models will utilize an impeller wear ring as well.
3. Open center chopping mechanism will consist of a stationary striker plate and a rotating slicing blade. Both blades will be constructed of high quality, ASTM A276 440C stainless steel, heat treated to 53-60 HRC. Slicing blade will be press fitted on to impeller suction secured with four stainless steel pins. Striker plate will be fixed to volute suction, ANSI flange design. Clearance between striker plate and slicing blade will be adjustable, in order to maintain a clearance of 0.003” to 0.010.” Striker plate will be sealed internally against volute with an O-ring.
4. Pump and motor shaft will be a solid, continuous piece of 416 stainless steel, keyed and tapered for matching impeller fit to reduce rotor imbalance and minimize stress risers associated with stepped shafts. Shafts utilizing a coupling or other attachment method will not be acceptable. Shaft will have a maximum allowable deflection of 0.002 inches at lower mechanical seal during operation.
5. Double mechanical seals will be a tandem system, consisting of two totally independent mechanical seals, each with its own single spring system acting in a common direction. Upper seal will have a silicon carbide rotating face and a silicon carbide stationary face and will be located between seal chamber and motor housing. Lower seal will have a silicon carbide rotating face and a silicon carbide stationary face and will be located between pump and lubricant chamber. Both seals will have 300 series stainless steel hardware and Buna-N elastomers.
6. Both seals will be pinned in place to prevent rotation of stationary seat and will seal to pump housing and must operate in an oil filled chamber which will provide superior heat transfer & seal cooling. Seals will not require routine maintenance or adjustment and can be easily replaced. Seal will be commercially available and not a pump manufacturer’s proprietary design. Double mechanical seals with a single or double spring and/or cartridge seals will not be accepted.
7. Common pump and motor shaft will rotate on two bearings. Bearings will be high quality and commercially available. Bearings will operate in an oil bath environment for superior lubrication, cooling, and life. Lower bearing will be of double row ball type, locked in position to accept radial and axial thrust loads and upper bearing shall be of single ball type for radial loads as needed to provide a minimum L10 Life of 50,000 hours at -50% to +50% of BEP.
8. Gaskets except for seal gland and bearing retainer will be of angular gland compression O-ring type eliminating critical slip fits and possibility of damage during service associated with sliding O-ring sealing arrangements. Mating surfaces where watertight sealing is required will be machined and fitted with O-rings.
9. Exterior of pump liquid end will be coated per Article 2.04 Finishes below.

10. Pump will be equipped with a stainless steel nameplate, located in an easily accessible location. Following data will be included on nameplate:
 - a. Manufacturer's Name
 - b. Pump Part Number, Model Number and Serial Number
 - c. Motor Horsepower Rating
 - d. Voltage, Phase and Frequency
 - e. Motor Speed
 - f. Motor Service Factor
 - g. Motor Full Load Amps
 - h. Ambient Temperature Rating
 - i. Code Letter
 - j. Pump Weight
 - k. Impeller Diameter
 - l. Motor Insulation Class

C. Motor Components:

1. Major driver components will be ASTM A48 Class 30 Cast Iron.
2. Motor will be a squirrel cage induction type, dielectric oil filled for optimal thermal management and maximum bearing life. Air-filled motors with grease lubricated bearings will not be acceptable. Motor shall be NEMA Type B. Stator windings shall be insulated with moisture resistant and spike resistant Class H varnish and magnet wire insulation, rated for 180 degrees C (356 degrees F). Motor shall be 230 volts, 60Hz, 3 phase, and will have a voltage tolerance of +/- 10% from nominal voltage. Motor will be designed to run continuously in a 40 degrees C (104 degrees F) ambient environment.
3. Stator will be press fit into motor housing, for mechanical stability and optimal heat transfer. Use of bolts or pins to secure stator into housing will not be acceptable.
4. Motor will be inverter duty rated, in accordance with NEMA MG-1, Part 31, and will have a minimum 1.2 service factor. Motor will be designed for usage in submersible applications only. Motor horsepower will be non-overloading of nameplate rating throughout entire pump performance curve.

5. Rotor bars will be die cast aluminum with integral cooling fins.
6. Motor will be capable of operating continuously at submergence depth of 66 feet (20 meters).
7. Motor will be capable of 15 evenly spaced starts per hour without overheating.
8. Motor will be CSA Listed to CSA harmonized standard. Certifications to include Class I Division 1 Group C&D Explosion-Proof with a T4 temperature rating.

D. Sensors:

1. Motors will have built-in thermal overload protection with automatic reset.
2. Moisture sensor detection system will consist of a dual probe system in seal chamber. Probes will monitor conductivity of oil. It is recommended to use a pump monitor relay (PMR) installed inside control panel which will trigger a warning light and alarm when pumped fluid is detected.
3. Motor will be equipped with three thermal sensors (one per phase) which will be embedded in end coil of stator windings, wired in series, and used to monitor stator temperatures. This will be used in conjunction with an external motor overload protection device and wired to control panel through single power cable.

E. Cable:

1. Pump will be equipped with (30/50/75/100) ft of a CSA qualified submersible power cable constructed in accordance with Type W guidelines. Power cable will also include moisture and temperature sensor leads in one common jacket:
 - a. For 18 and 21 frame pumps, cable entry system will be Plug & Play design, consisting of a voltage selectable expanding elastomeric plug, held in place by a cast stainless steel plate indicating voltage and max amperage. By using this plug, pumps 15HP and below will be capable of switching between voltages with only a cord change. Pumps requiring internal wiring modifications to change voltage will not be acceptable.
2. Pumps will be capable of being easily removed and replaced without removal of pump power cord from electrical conduit.

2.04 FINISHES:

- A. Exterior of pump will be coated with two coats Axalta Corlar ® two-part amidoamine epoxy, with a minimum thickness of 10 mils. Coating of pump interior to gain hydraulic efficiency will not be accepted.

2.05 PUMP MOUNTING & REMOVAL SYSTEM:

A. Base Elbow – Break Away Fitting Assembly (BAF):

1. Pump will be supplied with a Break Away Fitting assembly (BAF), which will allow pump to be installed and operate continuously in a vertical submerged condition.
 - a. Stationary portion of BAF shall be installed in wet pit, thus removing need for personnel to enter wet well.
 - b. Stationary portion of BAF will consist of a cast iron base elbow, guide rails, an upper guide bracket, and an intermediate guide bracket.
 - c. Cast iron base elbow shall be bolted to wet well floor.

B. BAF Moveable Slide Bracket:

1. Movable portion of BAF will consist of a cast iron slide, which shall bolt to pump discharge flange.
2. Slide guides pump up and down guide rails, and includes a gasket, which ensures a complete seal.

C. Guide Rails and Guide Brackets:

1. Two guide rails will be by Pump Station Fabricator, schedule 40 -304 stainless steel.
2. These guide rails shall be attached to base elbow at one end, intermediate guide bracket where required, and upper guide bracket at top end.
3. Intermediate guide bracket is required for depths of 13 feet (4metres) or more.
4. Upper guide bracket shall be attached to underside of wet well cover. Bracket shall have elastomer plugs, which reduce noise and rail vibration.
5. Guide rails serve only to guide pump, and do not carry weight of pump. Designs that do not use a movable gasket, use guide chain, or use a single guide rail will not be accepted.

PART 3 – EXECUTION

3.01 PREPARATION (BY PUMPING STATION FABRICATOR):

3.02 FIELD INSTALLATION (BY CONTRACTOR):

- A. Install in accordance with manufacturer’s printed instructions and City of Elyria, OH governing requirement.

1. Pump shall be capable of operating continuously in a vertical submerged condition.
2. Contractor shall complete all piping and supports for discharge force main, and make all electrical power and control connections, and install all safety devices and instrumentation prior to equipment start-up.
3. All anchor bolts, nuts, washers, and sleeves shall be Type 316 stainless steel furnished by contractor and shall be of ample size and strength for purpose intended.
4. Installation of Pump Mounting & Removal System above.

3.03 QUALITY CONTROL:

A. Factory Tests (BY MANUFACTURER):

1. Pump manufacturer will perform a pump performance test to verify hydraulic performance as standard.
2. Certified testing is required in accordance with Hydraulic Institute Standards 11.6 and 14.6. Additionally, following tests shall be conducted:
 - a. A check of motor voltage and frequency
 - b. A motor and cable insulation test for moisture content or insulation defects, in accordance with CSA criteria
3. Each motor will be dielectric tested to verify motor insulation integrity.

B. Pumping Station Fabricator Representative:

1. Representative will inspect equipment, support CONTRACTOR with equipment start-up procedures, and provide training to operators in how to effectively operate and maintain equipment.
2. Prior to Operational Testing, CONTRACTOR shall have pump station fabricator representative perform following:
 - a. Megger test stator and power cables.
 - b. Check proper rotation.
 - c. Check power supply voltage.
 - d. Measure motor operating load and no-load current.
 - e. Check level control operation and sequence.

3. During Final Acceptance Testing, representative will review recommended operation and maintenance procedures with Owner's personnel.
4. Representative will be present for a period of not less than one (1) day to complete following:
 - a. Inspect completed installation
 - b. Observe equipment testing
 - c. Observe equipment start-up
 - d. Instruct operational personnel on equipment operation and maintenance.

C. Field Tests (BY CONTRACTOR):

1. After installation, pumping system shall be field tested using potable water for a minimum of 30 minutes and check for correct direction of rotation in presence of manufacturer's representative and Engineer. Contractor shall be responsible for providing water from fire hydrant and for conveying water to site and providing required meter and back-flow prevention check valve assembly. Each pump shall be cycled through sequence of operation "pump on" as level rises in wet well and "pump off" during draw down. Once each pump has been tested separately, pumps shall be operated in parallel.
2. Each pump shall operate over its intended operating range without undue noise, vibration, or cavitation. Contractor shall monitor and record vibration at three symmetrically located points on each pump at maximum and minimum speed and supply data to City of Elyria.

D. Inspections:

1. Upon completion of installation and on-site testing, and before acceptance by City of Elyria Pumping Station Fabricator will submit a written statement that pump installation has been inspected and is completed in accordance with pump manufacturer's recommendations.

END OF SECTION

(THIS PAGE INTENTIONALLY LEFT BLANK)