CITY OF ELYRIA, OHIO

DEPARTMENT OF PUBLIC SERVICE
ENGINEERING DIVISION

PROJECT SPECIFICATIONS

FOR

CITY OF ELYRIA
CONSENT DECREE CONTROL MEASURE #8
PHASE #1 SEWER REHABILITATION PROJECT

Chris Pyanowski
Safety-Service Director

Kathy McKillips, P.E.
City Engineer

Signature:

Date: 1/7/2026

SUBMITTED BY AECOM



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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, January 29, 2026** for the project known as:

CONSENT DECREE CONTROL MEASURE #8
PHASE #1 SEWER REHABILITATION PROJECT

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 CIPP lining approximately 5,500 lineal feet of 6-inch to 12-inch sanitary sewer, nineteen (19) T-Liner installations, three (3) 10-foot CIPP partial liner of 10-inch sanitary sewer, and manhole rehabilitation of fifteen (15) sanitary manholes.

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 Plan holders List.

PRE-BID MEETING: There will be no pre-bid meeting for this project.

PROJECT RELATED QUESTIONS: Questions related to the project will be accepted until 5:00 P.M. on Thursday, January 22, 2026.

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 120 days from the date of the Notice to Commence Work to Complete all work. All Work shall be completed by June 30, 2026.

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. OH2025001 dated December 12, 2025 and can be found at website SAM.gov. **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 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: Wednesday January 7, 2026,one (1) proof

INSTRUCTIONS TO BIDDERS

1. ORDINANCE

1.1 The bids for this project are being taken in accordance with Ordinance No. 2025-216 passed by the Elyria City Council on December 15, 2025.

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

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

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 QUALIFICTIONS

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. 2025-216, which was passed by the Elyria City Council on December 15, 2025; 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. This project includes CIPP lining approximately 5,500 lineal feet of 6-inch to 12-inch sanitary sewer, nineteen (19) T-Liner installations, three (3) 10 foot CIPP partial liner of 10-inch sanitary sewer, and manhole rehabilitation of fifteen (15) sanitary manholes. The project is located in residential neighborhoods in the City of Elyria. 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. 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 must be completed no later than June 30, 2026.

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 sum of five hundred dollars ($500.00) for each calendar day that expires after the time 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. 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 – SURVIVIAL 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)

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

CONTRACTOR NAME

_____
Signature

_____
Print Name

_____
Date

THE CITY OF ELYRIA, OHIO

_____
Kevin Brubaker – Mayor Date

APPROVED AS TO FORM:

_____
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 **CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT**

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 _____, 2026.

(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 **CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT** in Elyria, Ohio.

Executed this _____ day of _____ in the year of 2026.

_____
Finance Director

Ordinance No.: 2025-216

Passed On: December 15, 2025

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: **CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT**

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: CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION 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 120 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:

BID FORM
CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	LABOR PRICE	MATERIAL PRICE	TOTAL UNIT PRICE	TOTAL COST
1	INTERNAL POINT REPAIR BY LINING 6”	2	EACH	$	$	$	$
2	INTERNAL POINT REPAIR BY LINING 8”	2	EACH	$	$	$	$
3	INTERNAL POINT REPAIR BY LINING 10”	3	EACH	$	$	$	$
4	FULL SEGMENT REPAIR BY LINING 6”	570	LF	$	$	$	$
5	FULL SEGMENT REPAIR BY LINING 8”	3,700	LF	$	$	$	$
6	FULL SEGMENT REPAIR BY LINING 10”	980	LF	$	$	$	$
7	FULL SEGMENT REPAIR BY LINING 12”	340	LF	$	$	$	$
8	CONNECTION CUT	150	EACH	$	$	$	$
9	LATERAL AND CONNECTION LINER 8” MAIN 6” LATERAL 10’ LATERAL LENGTH	10	EACH	$	$	$	$
10	LATERAL AND CONNECTION LINER 12” MAIN 6” LATERAL 10’ LATERAL LENGTH	9	EACH	$	$	$	$

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT	LABOR PRICE	MATERIAL PRICE	TOTAL UNIT PRICE	TOTAL COST
11	LATERAL LINER 6" DIAMETER LATERAL	410	LF	$	$	$	$
12	VACUUM INSERTED SEWER CLEAN-OUT	19	EACH	$	$	$	$
13	MANHOLE REHABILITATION	15	EACH	$	$	$	$
14	6" SEWER LATERAL REPAIR WITH EXCAVATION	12	LF	$	$	$	$
15	6" SEWER LATERAL REPAIR WITHOUT EXCAVATION	12	LF	$	$	$	$
16	PAVEMENT REPLACEMENT FULL DEPTH CONCRETE	15	SY	$	$	$	$
17	PAVEMENT REPLACEMENT ASPHALT OVERLAY WITH CONCRETE BASE	40	SY	$	$	$	$
18	DRIVE APRON REPLACEMENT	200	SF	$	$	$	$
19	SIDEWALK REPLACEMENT	100	SF	$	$	$	$
20	EXTERNAL POINT REPAIR OF 6"-12" SEWER	1	EACH	$	$	$	$
	TOTAL BASE BID					**$**	

UNOFFICIAL TOTALS

BASE BID ITEMS (1) THROUGH (20) $_____

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 2026.

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).

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: CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT.

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 **CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT** 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 _____, 2026.

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: **CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT.**

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 _____, 2026.

_____
(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 _____

SS

County of _____

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 _____, 2026.

(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 _____, 2026.

_____

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

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:

_____

_____

_____

_____

_____

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.

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

None.

VI. POTENTIALLY CONFLICTING PROJECTS

None.

STANDARD GENERAL CONDITIONS (EJCDC C-700)

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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

The Associated General Contractors of America — Skill Responsibility Integrity

ASCE American Society of Civil Engineers

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

EJCDC C-700 Standard General Conditions of the Construction Contract
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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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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.

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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.

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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.

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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

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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

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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

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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.

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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.

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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;

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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

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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

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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

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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

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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

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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

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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.

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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:

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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:

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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

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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

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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.

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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.

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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.

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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

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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

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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.

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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

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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.

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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.

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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.

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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

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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:

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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,

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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.

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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.

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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.

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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

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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.

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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

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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

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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

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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

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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.

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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, expediters, 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.

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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.

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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;

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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.

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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

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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.

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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

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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

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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.

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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

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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.

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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,

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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.

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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:*

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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:

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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.

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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.

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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.

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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.

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REQUIREMENTS FOR FEDERALLY FUNDED PROJECTS

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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 of 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 of 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 of State antitrust statues or commission if 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 goal for construction related activities is 5.4% (the total goal is based on 3.1% of MBEs and 2.3% of WBEs participation).**

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 https://www.transportation.ohio.gov/programs/business-economic-opportunity/dbe. The Department of Development operates the Encouraging Diversity Growth and Equity Program (EDGE), the other state approved DBE certification program. Information on EDGE can be found at https://development.ohio.gov/business/minority-business/business-certifications/encouraging-diversity-growth-and-equity-program.

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 DBE[1] subcontractor's[2] 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: ◯ ODOT ◯ DAS/EDGE ◯ Other: _____	Meets/ exceeds EPA certification standards? ◯ YES ◯ NO ◯ 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 DBE[1] subcontractors[2] 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 DBE[1] subcontractor[2] 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.

OMB CONTROL NO. 2030-0020
APPROVAL EXPIRES 06/30/2024

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 ☐ Annual ☐ Final Report (Project completed)
1C: Revision of a Prior Year Report? ◯ No ◯ 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. RECIPENT 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.) ☐	

4B. Total Procurements & MBE/WBE Accomplishments This Reporting Period (in dollars)

	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. ☐ Yes, my organization has implemented and documented each of the six Good Faith Efforts on the procurements made during this reporting period. ☐ 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. ☐ No MBE/WBE(s) applied ☐ No MBE/WBE(s) were qualified ☐ Other:
6. NAME OF RECIPIENT'S AUTHORIZED REPRESENTATIVE	TITLE
7. SIGNATURE OF RECIPIENT'S AUTHORIZED REPRESENTATIVE	DATE

EPA FORM 5700-52A available electronically at: https://www.epa.gov/grants/epa-form-5700-52a-united-states-environmental-protection-agency-minority-business

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 by 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 Contactor 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

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

OFFICE OF WATER

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 IIJA 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 Programs[1]
- 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 Iron and Steel 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 Iron and Steel 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
Digestor 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 Pilings (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 Manufactured Products 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 Manufactured Products 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

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 Contactor 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: Andrew D. Sawyers, Director
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
General • Waiver request includes the following information: — 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		
Cost Waiver Requests • Waiver request includes the following information: — 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		
Availability Waiver Requests • 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: — 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
Cost Waiver Requests • Does the waiver request include the following information? — 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%?				
Availability Waiver Requests • 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? — 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: — 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 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 (XXXXXXXXXX)

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.

<u>PROJECT QUESTIONS</u>

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		
Assistance Agreement Signed:	Exempt from AIS if Plans and Specifications Were Approved Before:	Basis for Exemption:
1/17/2014 through 9/30/2014	4/15/2014	• Consolidated Appropriations Act 2014 • National waiver signed 4/15/2014*
On or after 10/1/2014	6/10/2014	• 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		
Assistance Agreement Signed:	Exempt from AIS if Plans and Specifications Were Approved Before:	Basis for Exemption:
1/17/2014 through 9/30/2014	4/15/2014	• Consolidated Appropriations Act 2014 • National waiver signed 4/15/2014*
10/1/2014 through 12/15/2014	4/15/2014	• Continuing Appropriations Resolution 2015 (continued CAA 2014 requirements)** • National waiver signed 4/15/2014*
12/16/2014 through 9/30/2015	12/16/2014	• 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 WATER

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, comer 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?

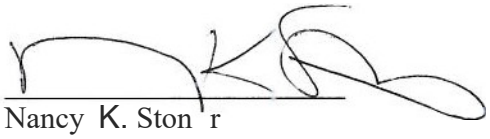
- Did these percentages vary by type of project (drinking water vs. wastewater treatment plant vs. pipe)?

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.

Issued on: APR 15 2014

Approved by: 

Nancy K. Stoner
Acting Assistant Administrator

Ohio Water Pollution Control Loan Fund
Use of American Iron and Steel - De Minimis Final Utilization and Certification Form

The Consolidated Appropriations Act of 2014 (P.L. 113-76) Section 436 requires the use of American & Steel in SRF-funded projects. Under the authority of Section 436(b)(1), the EPA has issued a public interest waiver for De Minimis incidental components. The assistance recipient wishing to use this waiver should consult with their contractor(s) to maintain an itemized list of components covered under De Minimis. At the conclusion of the project, this form must be completed and retained in the assistance recipient's project files and a copy provided to DEFA. Please print clearly or type.

Project Name:_____ Loan Agrmt #: _____

NOTE: The De Minimis waiver is only applicable to the cost of materials for the entire project. Do not include other project costs (labor, installation costs, etc.) in the "Total Cost of Materials". The cost of a material must include delivery to the site and any applicable tax. Must have sufficient documentation to support all costs included in this calculation.

Funds used for 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.

Total Cost of Materials: | 5% Limit: | 1% limit:

Manufacturer & Component Description	Part/Model #	Quantity (if applicable)	Cost per Unit (if applicable)	Component's Total Cost	How is Cost Documented?*

Use additional sheets as necessary

Total De Minimis Cost of Components:

If approaching the 5% or 1% limits, contact DEFA immediately

* Documentation must demonstrate confirmation of the components' actual costs (invoice, etc.).

Completed by:

Name: _____ Title: _____

Signature: _____ Date: _____

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).

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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.

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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.

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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.

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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

Date

Chief Engineer

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.

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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.

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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 mare 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 property 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: City of Elyria Engineering Department	
Project Name: Consent Decree Control Measure #8 Phase #1 Sewer Rehabilitation Project	**Project Number:** 60332065
Date Bid Advertisement will start: January 7, 2026	**Date Bids will be opened:** January 29, 2026
Engineer's estimate of construction cost: TBD	
Time of completion for work (e.g., 9 months): 120 days	

Please provide the Section/PDF 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 #* pp. 118
- ■ Yes ☐ No Certification Regarding Debarment & Suspension — *Section/Page #* pp. 121
- ■ Yes ☐ No Prohibition on telecommunications and video surveillance equipment — *Section/Page #* pp. 216
- ■ Yes ☐ No Contract provisions describing DBE requirements — *Section/Page #* pp. 122
- ■ Yes ☐ No DBE Forms 6100-3, 6100-4 and 6100- 2 — *Section/Page #* pp. 127
- ■ Yes ☐ No Davis-Bacon wage rate requirements — *Section/Page #* pp. 137
- ■ Yes ☐ No Build America, Buy America Acknowledgement Form — *Section/Page #* pp. 147
- ■ Yes ☐ No American Iron and Steel Acknowledgement Form — *Section/Page #* pp. 169
- ■ Yes ☐ No Violating Facilities clause — *Section/Page #* pp. 203
- ■ Yes ☐ No Small Businesses in Rural Areas (SBRA) — *Section/Page #* pp. 204
- ■ Yes ☐ No Insurance for both the contractor and all subcontractors: — *Section/Page #* pp. 205
  - ■ Yes ☐ No Workers' Compensation
  - ■ Yes ☐ No Public Liability
  - ■ Yes ☐ No Property Damage
  - ■ Yes ☐ No Vehicle Liability
  - ■ Yes ☐ No Flood (if appropriate)
  - ■ Yes ☐ No Builders Risk (can be held by owner instead)
- ■ Yes ☐ No Material Testing (statement regarding testing for specifications) — *Section/Page #* pp. 207
- ■ Yes ☐ No Project-specific continuous service/treatment provisions — *Section/Page #* pp. 208
- ■ Yes ☐ No WPCLF/WSRLA Change Order form & instructions — *Section/Page #* pp. 209
- ■ Yes ☐ No Bid proposal forms (necessary for determining loan eligibility) — *Section/Page #* pp. 29

Other Contract Requirements

- ☐ N/A - superseded by local requirements
- ■ Yes ☐ No Text of the bid advertisement — *Section/Page #* pp. 4
- ☐ Yes ■ No Engineer's estimate of cost for construction — *Section/Page #* TBD
- ■ Yes ☐ No Description of how the bid price, including any alternates, is determined — *Section/Page #* pp. 6
- ■ Yes ☐ No Notice to Proceed form — *Section/Page #* pp. 26
- ☐ Yes ■ No Any material or equipment designated from a "sole source?" If yes, attach a description and justification for each item. — *Section/Page #*
- ☐ 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 #* pp. 40
- ■ Yes ☐ No Payment and Performance Bonds in the form required by ORC — *Section/Page #* pp. 40
- ■ Yes ☐ No Provisions for payment retention in conformance with ORC — *Section/Page #* pp. 13
- ■ Yes ☐ No A specific time for completion of the work — *Section/Page #* pp. 4

Checklist Prepared by: Ryan Miller Phone or E-mail Ryan.Miller1@aecom.com

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

FEDERAL DAVIS-BACON WAGE RATES

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"General Decision Number: OH20250001 12/12/2025

Superseded General Decision Number: OH20240001

State: Ohio

Construction Types: Heavy and Highway

Counties: Ohio Statewide.

Heavy and Highway Construction Projects

Modification Number	Publication Date
0	01/03/2025
1	02/07/2025
2	02/14/2025
3	02/28/2025
4	03/07/2025
5	03/14/2025
6	04/25/2025
7	05/02/2025
8	05/09/2025
9	05/16/2025
10	05/30/2025
11	06/06/2025
12	06/27/2025
13	07/11/2025
14	07/18/2025
15	07/25/2025
16	08/08/2025
17	08/15/2025
18	09/05/2025
19	09/12/2025
20	09/26/2025
21	12/05/2025
22	12/12/2025

BROH0001-001 06/01/2024

DEFIANCE, FULTON (Excluding Fulton, Amboy & Swan Creek Townships), HENRY (Excluding Monroe, Bartlow, Liberty, Washington, Richfield, Marion, Damascus & Townships & that part of Harrison Township outside corporate limits of city of Napoleon), PAULDING, PUTNAM and WILLIAMS COUNTIES

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0001-004 06/01/2023

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	$ 32.40	19.30

BROH0003-002 06/01/2024

FULTON (Townships of Amboy, Swan Creek & Fulton), HENRY (Townships of Washington, Damascus, Richfield, Bartlow, Liberty, Harrison, Monroe, & Marion), LUCAS and WOOD (Townships of Perrysburg, Ross, Lake, Troy, Freedom, Montgomery, Webster, Center, Portage, Middleton, Plain, Liberty, Henry, Washington, Weston, Milton, Jackson & Grand Rapids) COUNTIES

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0005-003 06/01/2020

CUYAHOGA, LORAIN & MEDINA (Hinckley, Granger, Brunswick, Liverpool, Montville, York, Homer, Harrisville, Chatham, Litchfield & Spencer Townships and the city of Medina)

	Rates	Fringes
BRICKLAYER		
BRICKLAYERS; CAULKERS; CLEANERS; POINTERS; & STONEMASONS	$ 36.64	17.13
SANDBLASTERS	$ 36.39	17.13
SEWER BRICKLAYERS & STACK BUILDERS	$ 36.64	17.13
SWING SCAFFOLDS	$ 37.14	17.13

BROH0006-005 06/01/2024

CARROLL, COLUMBIANA (Knox, Butler, West & Hanover Townships), STARK & TUSCARAWAS

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0007-002 06/01/2024

LAWRENCE

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0007-005 06/01/2023

PORTAGE & SUMMIT

	Rates	Fringes
BRICKLAYER	$ 32.40	19.30

BROH0007-010 06/01/2024

PORTAGE & SUMMIT

	Rates	Fringes
MASON - STONE	$ 33.39	20.06

BROH0008-001 06/01/2024

COLUMBIANA (Salem, Perry, Fairfield, Center, Elk Run, Middleton, & Unity Townships and the city of New Waterford), MAHONING & TRUMBULL

	Rates	Fringes
BRICKLAYER	$ 33.39	20.06

BROH0009-002 06/01/2024

BELMONT & MONROE COUNTIES and the Townships of Warren & Mt. Pleasant and the Village of Dillonvale in JEFFERSON COUNTY

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06
Refractory	$ 31.45	19.01

BROH0010-002 06/01/2024

COLUMBIANA (St. Clair, Madison, Wayne, Franklin, Washington, Yellow Creek & Liverpool Townships) & JEFFERSON (Brush Creek & Saline Townships)

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0014-002 06/01/2024

HARRISON & JEFFERSON (Except Mt. Pleasant, Warren, Brush Creek, Saline & Salineville Townships & the Village of Dillonvale)

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0016-002 06/01/2023

ASHTABULA, GEAUGA, and LAKE COUNTIES

	Rates	Fringes
Bricklayer, Stonemason	$ 32.40	19.30

BROH0018-002 06/01/2024

BROWN, BUTLER, CLERMONT, HAMILTON, PREBLE (Gasper, Dixon, Israel, Lanier, Somers & Gratis Townships) & WARREN COUNTIES:

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0022-004 06/01/2024

CHAMPAIGN, CLARK, CLINTON, DARKE, GREENE, HIGHLAND, LOGAN, MIAMI, MONTGOMERY, PREBLE (Jackson, Monroe, Harrison, Twin, Jefferson & Washington Townships) and SHELBY COUNTIES

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0032-001 06/01/2024

GALLIA & MEIGS

	Rates	Fringes

Bricklayer, Stonemason.....$ 33.39 20.06

BROH0035-002 06/01/2024

ALLEN, AUGLAIZE, MERCER and VAN WERT COUNTIES

	Rates	Fringes
Bricklayer, Stonemason.....$	33.39	20.06

BROH0039-002 06/01/2024

ADAMS & SCIOTO

	Rates	Fringes
Bricklayer, Stonemason.....$	33.39	20.06

BROH0040-003 06/01/2024

ASHLAND, CRAWFORD, HARDIN, HOLMES, MARION, MORROW, RICHLAND, WAYNE and WYANDOT (Except Crawford, Ridge, Richland & Tymochtee Townships) COUNTIES

	Rates	Fringes
Bricklayer, Stonemason.....$	33.39	20.06

FOOTNOTE: Layout Man and Sawman rate: $1.00 per hour above journeyman rate.
Free standing stack work ground level to top of stack; Sandblasting and laying of carbon masonry material in swing stage and/or scaffold; Ramming and spading of plastics and gunniting: $1.50 per hour above journeyman rate.
""Hot"" work: $2.50 above journeyman rate.

BROH0044-002 06/01/2024

	Rates	Fringes
Bricklayer, Stonemason COSHOCTON, FAIRFIELD, GUERNSEY, HOCKING, KNOX, KICKING, MORGAN, MUSKINGUM, NOBLE (Beaver, Buffalo, Seneca & Wayne Townships) & PERRY COUNTIES:.....$	33.39	20.06

BROH0045-002 06/01/2023

FAYETTE, JACKSON, PIKE, ROSS and VINTON COUNTIES

	Rates	Fringes
Bricklayer, Stonemason	$ 35.39	17.47

BROH0046-002 06/01/2024

ERIE, HANCOCK, HURON, OTTAWA, SANDUSKY, SENECA, WOOD (Perry & Bloom Townships) and WYANDOT (Tymochtee, Crawford, Ridge & Richland Townships) COUNTIES & the Islands of Lake Erie north of Sandusky

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

FOOTNOTE: Layout Man and Sawman rate: $1.00 per hour above journeyman rate.
Free standing stack work ground level to top of stack; Sandblasting and laying of carbon masonry material in swing stage and/or scaffold; Ramming and spading of plastics and gunniting: $1.50 per hour above journeyman rate.
""Hot"" work: $2.50 above journeyman rate.

BROH0052-001 06/01/2024

ATHENS COUNTY

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0052-003 06/01/2024

NOBLE (Brookfield, Noble, Center, Sharon, Olive, Enoch, Stock, Jackson, Jefferson & Elk Townships) and WASHINGTON COUNTIES

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

BROH0055-003 06/01/2024

DELAWARE, FRANKLIN, MADISON, PICKAWAY and UNION COUNTIES

	Rates	Fringes
Bricklayer, Stonemason	$ 33.39	20.06

CARP0002-024 05/01/2025

BROWN, BUTLER, CHAMPAIGN, CLARK, CLERMONT, CLINTON, DARKE, GREENE, HAMILTON, LOGAN, MIAMI, MONTGOMERY, PREBLE, SHELBY & WARREN

	Rates	Fringes
Carpenter & Piledrivermen	$ 35.94	23.59
Diver	$ 40.58	9.69

CARP0171-001 05/01/2025

MAHONING & TRUMBULL

	Rates	Fringes
CARPENTER	$ 33.19	25.02

CARP0171-002 05/01/2025

BELMONT, COLUMBIANA, HARRISON, JEFFERSON & MONROE

	Rates	Fringes
CARPENTER	$ 32.50	26.19

CARP0200-002 05/01/2025

ADAMS, ATHENS, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, GALLIA, GUERNSEY, HIGHLAND, HOCKING, JACKSON, LAWRENCE, LICKING, MADISON, MARION, MEIGS, MORGAN, MUSKINGUM, NOBLE, PERRY, PICKAWAY, PIKE, ROSS, SCIOTO, UNION, VINTON and WASHINGTON COUNTIES

	Rates	Fringes
CARPENTER	$ 35.94	23.59
Diver	$ 39.41	10.40
PILEDRIVERMAN	$ 35.94	23.59

CARP0285-001 05/01/2025

CARROLL, STARK, TUSCARAWAS and WAYNE

	Rates	Fringes
CARPENTER	$ 34.07	24.28

CARP0285-002 05/01/2025

COSHOCTON, HOLMES, KNOX & MORROW

	Rates	Fringes
CARPENTER	$ 33.38	24.69

CARP0285-008 05/01/2025

MEDINA, PORTAGE & SUMMIT

	Rates	Fringes
CARPENTER	$ 37.18	25.07

CARP0351-005 05/01/2025

LUCAS & WOOD

	Rates	Fringes
CARPENTER	$ 35.44	27.56

CARP0351-006 05/01/2025

	Rates	Fringes
CARPENTER DEFIANCE, FULTON, HANCOCK, HENRY, PAULDING & WILLIAMS COUNTIES	$ 32.05	26.13

CARP0372-002 05/01/2025

ALLEN, AUGLAIZE, HARDIN, MERCER, PUTNAM & VAN WERT

	Rates	Fringes
CARPENTER	$ 31.80	26.33

CARP0435-005 05/01/2025

ASHTABULA, CUYAHOGA, GEAUGA & LAKE

	Rates	Fringes
CARPENTER	$ 38.57	24.64

CARP0735-001 05/01/2025

ASHLAND, HURON & RICHLAND

	Rates	Fringes
CARPENTER	$ 34.67	23.57

CARP0735-002 05/01/2025

LORAIN

	Rates	Fringes
CARPENTER	$ 38.42	24.01

CARP0735-004 05/01/2025

ERIE

	Rates	Fringes
CARPENTER	$ 36.71	24.14

CARP0744-001 05/01/2025

CRAWFORD, OTTAWA, SANDUSKY, SENECA & WYANDOT

	Rates	Fringes
CARPENTER	$ 33.74	27.05

CARP1090-002 05/01/2025

ALLEN, AUGLAIZE, HARDIN, MERCER, PUTNAM, VAN WERT & WYANDOT

	Rates	Fringes
Piledrivermen & Diver's Tender	$ 35.94	28.39

DIVERS - $250.00 per day

CARP1090-003 05/01/2025

BELMONT, HARRISON, & MONROE

	Rates	Fringes
Diver, Wet	$ 58.52	24.91
Piledrivermen; Diver, Dry	$ 39.01	24.91

CARP1090-004 05/01/2025

CARROLL, STARK, TUSCARAWAS & WAYNE

	Rates	Fringes
Diver, Wet	$ 49.82	25.40
Piledrivermen; Diver, Dry	$ 33.21	25.40

CARP1090-005 05/01/2025

ASHLAND, ASHTABULA, CUYAHOGA, ERIE, GEAUGA, HURON, LAKE, LORAIN, MEDINA, PORTAGE, RICHLAND & SUMMIT

	Rates	Fringes
Diver, Wet	$ 54.51	27.50
Piledrivermen; Diver, Dry	$ 36.34	27.50

CARP1090-006 05/01/2025

COSHOCTON, HOLMES, KNOX & MORROW

	Rates	Fringes
Diver, Wet	$ 54.36	22.54
Piledrivermen; Diver, Dry	$ 36.24	22.54

CARP1090-007 05/01/2025

MAHONING & TRUMBULL

	Rates	Fringes
Diver, Wet	$ 50.85	24.82
Piledrivermen; Diver, Dry	$ 33.90	24.82

CARP1090-008 05/01/2025

COLUMBIANA & JEFFERSON

	Rates	Fringes

PILEDRIVERMAN.....$ 39.01 24.91

CARP1090-009 05/01/2025

CRAWFORD, DEFIANCE, FULTON, HANCOCK, HENRY, LUCAS, OTTAWA, PAULDING, SANDUSKY, SENECA, WILLIAMS & WOOD

	Rates	Fringes
Piledrivermen & Diver's Tender	$ 37.98	28.63

DIVERS - $250.00 per day

ELEC0008-002 05/27/2024

DEFIANCE, FULTON, HANCOCK, HENRY, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS & WOOD

	Rates	Fringes
CABLE SPLICER	$ 38.98	18.96
ELECTRICIAN	$ 48.40	4.5%+23.06

ELEC0032-003 06/01/2025

ALLEN, AUGLAIZE, HARDIN, LOGAN, MERCER, SHELBY, VAN WERT & WYANDOT (Crawford, Jackson, Marseilles, Mifflin, Ridgeland, Ridge & Salem Townships)

	Rates	Fringes
ELECTRICIAN	$ 39.17	23.60

ELEC0038-002 04/28/2025

CUYAHOGA, GEAUGA (Bainbridge, Chester & Russell Townships) & LORAIN (Columbia Township)

	Rates	Fringes
ELECTRICIAN		
Excluding Sound & Communications Work	$ 46.63	24.92

FOOTNOTES;

a. 6 Paid Holidays: New Year's Day; Memorial Day; July 4th; Labor Day; Thanksgiving Day; & Christmas Day
b. 1 week's paid vacation for 1 year's service; 2 weeks' paid vacation for 2 or more years' service

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ELEC0038-008 04/28/2025

CUYAHOGA, GEAUGA (Bainbridge, Chester & Russell Townships) & LORAIN (Columbia Township)

	Rates	Fringes
Sound & Communication Technician		
Communications Technician	$ 34.30	14.95
Installer Technician	$ 33.05	14.91

FOOTNOTES;
a. 6 Paid Holidays: New Year's Day; Memorial Day; July 4th; Labor Day; Thanksgiving Day; & Christmas Day
b. 1 week's paid vacation for 1 year's service; 2 weeks' paid vacation for 2 or more years' service

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ELEC0064-003 11/30/2025

COLUMBIANA (Butler, Fairfield, Perry, Salem & Unity Townships) MAHONING (Austintown, Beaver, Berlin, Boardman, Canfield, Ellsworth, Coitsville, Goshen, Green, Jackson, Poland, Springfield & Youngstown Townships), & TRUMBULL (Hubbard & Liberty Townships)

	Rates	Fringes
ELECTRICIAN	$ 41.49	21.81

ELEC0071-005 01/06/2025

ASHTABULA, CUYAHOGA, GEAUGA, LAKE & LORAIN

	Rates	Fringes
LINE CONSTRUCTION: Equipment Operator		
DOT/Traffic Signal & Highway Lighting Projects	$ 39.97	27%+8.00
Municipal Power/Transit		

Projects	$ 49.46	27%+8.25
LINE CONSTRUCTION: Groundman		
DOT/Traffic Signal & Highway Lighting Projects	$ 31.10	27%+8.00
Municipal Power/Transit Projects	$ 38.47	27%+8.25
LINE CONSTRUCTION: Linemen/Cable Splicer		
DOT/Traffic Signal & Highway Lighting Projects	$ 43.89	27%+8.00
Municipal Power/Transit Projects	$ 54.96	27%+8.25

ELEC0071-010 01/06/2025

Statewide

	Rates	Fringes
Line Construction		
Equipment Operator	$ 40.44	4%+16.09
Groundman	$ 29.07	4%+13.81
Lineman & Cable Splicers	$ 46.02	4%+17.20

ELEC0082-002 12/02/2024

CLINTON, DARKE, GREENE, MIAMI, MONTGOMERY, PREBLE & WARREN
(Wayne, Clear Creek & Franklin Townships)

	Rates	Fringes
ELECTRICIAN	$ 38.00	22.49

ELEC0082-006 11/25/2024

CLINTON, DARKE, GREENE, MIAMI, MONTGOMERY, PREBLE & WARREN
(Wayne, Clear Creek & Franklin Townships)

	Rates	Fringes
Sound & Communication Technician		
Cable Puller	$ 13.85	5.30
Installer/Technician	$ 27.70	15.71

ELEC0129-003 02/24/2025

LORAIN (Except Columbia Township) & MEDINA (Litchfield &

Liverpool Townships)

	Rates	Fringes
ELECTRICIAN	$ 42.95	18.81

ELEC0129-004 02/24/2025

ERIE & HURON (Lyme, Ridgefield, Norwalk, Townsend, Wakeman, Sherman, Peru, Bronson, Hartland, Clarksfield, Norwich, Greenfield, Fairfield, Fitchville & New London Townships)

	Rates	Fringes
ELECTRICIAN	$ 42.95	18.81

ELEC0141-003 06/02/2025

BELMONT COUNTY

	Rates	Fringes
CABLE SPLICER	$ 42.94	27.74
ELECTRICIAN	$ 39.25	31.23

ELEC0212-003 11/26/2018

BROWN, CLERMONT & HAMILTON

	Rates	Fringes
Sound & Communication Technician	$ 24.35	10.99

ELEC0212-005 06/02/2025

BROWN, CLERMONT, and HAMILTON COUNTIES

	Rates	Fringes
ELECTRICIAN	$ 38.05	22.97

ELEC0245-001 08/26/2024

ALLEN, HARDIN, VAN WERT & WYANDOT (Crawford, Jackson, Marseilles, Mifflin, Richland, Ridge & Salem Townships)

	Rates	Fringes
Line Construction		
Equipment Operator	$ 32.95	28%+7.85
Groundman Truck Driver	$ 20.59	28%+7.85
Lineman	$ 47.07	28%+7.85

FOOTNOTE: a. Half day's Paid Holiday: The last 4 hours of the workday prior to Christmas or New Year's Day

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ELEC0245-003 01/01/2025

DEFIANCE, FULTON, HANCOCK, HENRY, HURON, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS, and WOOD COUNTIES

	Rates	Fringes
Line Construction		
Cable Splicer	$ 53.90	8.10+28%
Groundman/Truck Driver	$ 20.51	8.10+28%
Heli-arc Welding	$ 47.17	8.10+28%
Lineman	$ 46.87	8.10+28%
Operator - Class 1	$ 37.50	8.10+28%
Operator - Class 2	$ 32.81	8.10+28%
Traffic Signal & Lighting Technician	$ 42.18	8.10+28%

FOOTNOTE: a. 6 Observed Holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; & Christmas Day. Employees who work on a holiday shall be paid at a rate of double their applicable classified straight-time rates for the work performed on such holiday.

ELEC0245-004 01/01/2025

ERIE COUNTY

	Rates	Fringes
Line Construction		
Cable Splicer	$ 53.90	28%+8.10
Groundman/Truck Driver	$ 20.51	28%+8.10
Lineman	$ 46.87	28%+8.10
Operator - Class 1	$ 37.50	28%+8.10
Operator - Class 2	$ 32.81	28%+8.10

FOOTNOTE: a. 6 Observed Holidays: New Year's Day; Memorial

Day; Independence Day; Labor Day; Thanksgiving Day; & Christmas Day. Employees who work on a holiday shall be paid at a rate of double their applicable classified straight-time rates for the work performed on such holiday.

ELEC0246-001 10/28/2024

Carroll, Columbiana, Harrison and Jefferson Counties in Ohio; Brooke and Hancock Counties in West Virginia.

	Rates	Fringes
ELECTRICIAN	$ 44.00	30.38%+24.31

FOOTNOTE: a. 1 1/2 Paid Holidays: The last scheduled workday prior to Christmas & 4 hours on Good Friday.

ELEC0306-005 05/27/2024

MEDINA (Brunswick, Chatham, Granger, Guilford, Harrisville, Hinckley, Homer, Lafayette, Medina, Montville, Sharon, Spencer, Wadsworth, Westfield & York Townships), PORTAGE (Atwater, Aurora, Brimfield, Deerfield, Franklin, Mantua, Randolph, Ravenna, Rootstown, Shalersville, Streetsboro & Suffield Townships), SUMMIT & WAYNE (Baughman, Canaan, Chester, Chippewa, Congress, Green, Milton, & Wayne Townships)

	Rates	Fringes
CABLE SPLICER	$ 46.81	20.95
ELECTRICIAN	$ 42.55	20.95

ELEC0317-002 06/02/2025

GALLIA & LAWRENCE

	Rates	Fringes
CABLE SPLICER	$ 32.68	18.13
ELECTRICIAN	$ 41.15	29.35

ELEC0540-005 06/30/2025

CARROLL (Northern half, including Fox, Harrison, Rose & Washington Townhships), COLUMBIANA (Knox Township), HOLMES, MAHONING (Smith Township), STARK, TUSCARAWAS (North of Auburn,

Clay, Rush & York Townships), and WAYNE (South of Baughman, Chester, Green & Wayne Townships) COUNTIES

	Rates	Fringes
ELECTRICIAN	$ 39.86	29.19

ELEC0573-003 06/01/2025

ASHTABULA (Colebrook, Wayne, Williamsfield, Orwell & Windsor Townships), GEAUGA (Auburn, Middlefield, Parkman & Troy Townships), MAHONING (Milton Township), PORTAGE (Charlestown, Edinburg, Freedom, Hiram, Nelson, Palmyra, Paris & Windham Townships), and TRUMBULL (Except Liberty & Hubbard Townships)

	Rates	Fringes
ELECTRICIAN	$ 42.20	23.37

ELEC0575-001 05/29/2023

ADAMS, FAYETTE, HIGHLAND, HOCKING, JACKSON (Bloomfield, Franklin, Hamilton, Jefferson, Lick, Madison, Scioto, Coal, Jackson, Liberty, Milton & Washington Townships), PICKAWAY (Deer Creek, Perry, Pickaway, Salt Creek & Wayne Townships), PIKE (Beaver, Benton, Jackson, Mifflin, Pebble, PeePee, Perry, Seal, Camp Creek, Newton, Scioto, Sunfish, Union & Marion Townships), ROSS, SCIOTO & VINTON (Clinton, Eagle, Elk, Harrison, Jackson, Richland & Swan Townships)

	Rates	Fringes
ELECTRICIAN	$ 37.00	22.26

ELEC0648-001 09/01/2025

BUTLER and WARREN COUNTIES (Deerfield, Hamilton, Harlan, Massie, Salem, Turtle Creek, Union & Washington Townships)

	Rates	Fringes
CABLE SPLICER	$ 30.50	18.23
ELECTRICIAN	$ 38.00	24.162

ELEC0673-004 05/26/2025

ASHTABULA (Excluding Orwell, Colebrook, Williamsfield, Wayne & Windsor Townships), GEAUGA (Burton, Chardon, Claridon, Hambden, Huntsburg, Montville, Munson, Newbury & Thompson Townships) and LAKE COUNTIES

	Rates	Fringes
CABLE SPLICER	$ 33.81	21.47
ELECTRICIAN	$ 41.17	24.58

ELEC0683-002 06/02/2025

CHAMPAIGN, CLARK, DELAWARE, FAIRFIELD, FRANKLIN, MADISON, PICKAWAY (Circleville, Darby, Harrison, Jackson, Madison, Monroe, Muhlenberg, Scioto, Walnut & Washington Townships), and UNION COUNTIES

	Rates	Fringes
CABLE SPLICER	$ 44.00	26.40
ELECTRICIAN	$ 43.00	26.37

ELEC0688-003 05/30/2022

ASHLAND, CRAWFORD, HURON (Richmond, New Haven, Ripley & Greenwich Townships), KNOX (Liberty, Clinton, Union, Howard, Monroe, Middleberry, Morris, Wayne, Berlin, Pike, Brown & Jefferson Townships), MARION, MORROW, RICHLAND and WYANDOT (Sycamore, Crane, Eden, Pitt, Antrim & Tymochtee Townships) COUNTIES

	Rates	Fringes
ELECTRICIAN	$ 32.30	21.83

ELEC0972-002 06/01/2024

ATHENS, MEIGS, MONROE, MORGAN, NOBLE, VINTON (Brown, Knox, Madison, Vinton & Wilkesville Townships), and WASHINGTON COUNITES

	Rates	Fringes
CABLE SPLICER	$ 40.25	33.33
ELECTRICIAN	$ 40.00	33.32

ELEC1105-001 05/27/2024

COSHOCTON, GUERNSEY, KNOX (Jackson, Clay, Morgan, Miller, Milford, Hilliar, Butler, Harrison, Pleasant & College Townships), LICKING, MUSKINGUM, PERRY, and TUSCARAWAS (Auburn, York, Clay, Jefferson, Rush, Oxford, Washington, Salem, Perry & Bucks Townships) COUNTIES

	Rates	Fringes
ELECTRICIAN	$ 39.60	24.41

ENGI0018-003 05/01/2024

ASHTABULA, CUYAHOGA, ERIE, GEAUGA, LAKE, LORAIN, MEDINA, PORTAGE, and SUMMIT COUNTIES

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 45.63	16.41
GROUP 2	$ 45.53	16.41
GROUP 3	$ 44.49	16.41
GROUP 4	$ 43.27	16.41
GROUP 5	$ 37.98	16.41
GROUP 6	$ 46.63	16.41
GROUP 7	$ 46.63	16.41

OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - Air Compressor on Steel Erection; Barrier Moving Machine; Boiler Operator on Compressor or Generator when mounted on a Rig; Cableway; Combination Concrete Mixer & Tower; Concrete Plant (over 4 yd. Capacity); Concrete Pump; Crane (All Types, Including Boom Truck, Cherry Picker); Crane-Compact, Track or Rubber over 4,000 lbs. capacity; Cranes-Self Erecting, Stationary, Track or Truck (All Configurations); Derrick; Dragline; Dredge (Dipper, Clam or Suction); Elevating Grader or Euclid Loader; Floating Equipment (All Types); Gradall; Helicopter Crew (Operator-Hoist or Winch); Hoe (all types); Hoisting Engine on Shaft or Tunnel Work; Hydraulic Gantry (Lifting System); Industrial-Type Tractor; Jet Engine Dryer (D8 or D9) Diesel Tractor; Locomotive (Standard Gauge); Maintenance Operator Class A; Mixer, Paving (Single or Double Drum); Mucking Machine; Multiple Scraper; Piledriving Machine (All Types); Power Shovel; Prentice Loader; Quad 9 (Double Pusher); Rail Tamper (with auto lifting & aligning device); Refrigerating

Machine (Freezer Operation); Rotary Drill, on Caisson work; Rough Terrain Fork Lift with Winch/Hoist; Side-Boom; Slip-Form Paver; Tower Derrick; Tree Shredder; Trench Machine (Over 24"" wide); Truck Mounted Concrete Pump; Tug Boat; Tunnel Machine and/or Mining Machine; Wheel Excavator; and Asphalt Plant Engineer (Cleveland District Only).

GROUP 2 - Asphalt Paver; Automatic Subgrader Machine, Self-Propelled (CMI Type); Bobcat Type and/or Skid Steer Loader with Hoe Attachment Greater than 7,000 lbs.; Boring Machine More than 48""; Bulldozer; Endloader; Horizontal Directional Drill (Over 50,000 ft lbs thrust); Hydro Milling Machine; Kolman-type Loader (production type-Dirt); Lead Greaseman; Lighting & Traffic Signal Installation Equipment (includes all groups or classifications); Material Transfer Equipment (Shuttle Buggy) Asphalt; Pettibone-Rail Equipment; Power Grader; Power Scraper; Push Cat; Rotomill (all), Grinders & Planers of All types; Trench Machine (24"" wide & under); Vermeer type Concrete Saw; and Maintenance Operators (Portage and Summit Counties Only).

GROUP 3 - A-Frame; Air Compressor on Tunnel Work (low pressure); Asphalt Plant Engineer (Portage and Summit Counties Only); Bobcat-type and/or Skid Steer Loader with or without Attachments; Highway Drills (all types); Locomotive (narrow gauge); Material Hoist/Elevator; Mixer, Concrete (more than one bag capacity); Mixer, one bag capacity (Side Loader); Power Boiler (Over 15 lbs. Pressure) Pump Operator installing & operating Well Points; Pump (4"" & over discharge); Roller, Asphalt; Rotovator (lime soil stabilizer); Switch & Tie Tampers (without lifting & aligning device); Utility Operator (Small equipment); Welding Machines; and Railroad Tie Inserter/Remover; Articulating/straight bed end dumps if assigned (minus $4.00 per hour.

GROUP 4 - Backfiller; Ballast Re-locator; Bars, Joint & Mesh Installing Machine; Batch Plant; Boring Machine Operator (48"" or less); Bull Floats; Burlap & Curing Machine; Concrete Plant (capacity 4 yd. & under); Concrete Saw (Multiple); Conveyor (Highway); Crusher; Deckhand; Farm-type Tractor with attachments (highway); Finishing Machine; Fireperson, Floating Equipment (all types); Forklift; Form Trencher; Hydro Hammer expect masonary; Hydro Seeder; Pavement Breaker; Plant Mixer; Post Driver; Post Hole Digger (Power Auger); Power Brush Burner; Power Form Handling Equipment; Road Widening Trencher; Roller (Brick, Grade & Macadam); Self-Propelled Power Spreader;

Self-Propelled Power Subgrader; Steam Fireperson; Tractor (Pulling Sheepfoot, Roller or Grader); and Vibratory Compactor with Integral Power.

GROUP 5 - Compressor (Portable, Sewer, Heavy & Highway); Drum Fireperson (Asphalt Plant); Generator; Masonry Fork Lift; Inboard-Outboard Motor Boat Launch; Oil Heater (asphalt plant); Oiler/Helper; Power Driven Heater; Power Sweeper & Scrubber; Pump (under 4"" discharge); Signalperson; Tire Repairperson; VAC/ALLS; Cranes - Compact, track or rubber under 4,000 pound capacity; fueling and greasing; and Chainmen.

GROUP 6 - Master Mechanic & Boom from 150 to 180.

GROUP 7 - Boom from 180 and over.

ENGI0018-004 05/01/2024

ADAMS, ALLEN, ASHLAND, ATHENS, AUGLAIZE, BELMONT, BROWN, BUTLER, CARROLL, CHAMPAIGN, CLARK, CLERMONT, CLINTON, COSHOCTON, CRAWFORD, DARKE, DEFIANCE, DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, FULTON, GALLIA, GREENE, GUERNSEY, HAMILTON, HANCOCK, HARDIN, HARRISON, HENRY, HIGHLAND, HOCKING, HOLMES, HURON, JACKSON, JEFFERSON, KNOX, LAWRENCE, LICKING, LOGAN, LUCAS, MADISON, MARION, MEIGS, MERCER, MIAMI, MONROE, MONTGOMERY, MORGAN, MORROW, MUSKINGUM, NOBLE, OTTAWA, PAULDING, PERRY, PICKAWAY, PIKE, PREBLE, PUTNAM, RICHLAND, ROSS, SANDUSKY, SCIOTO, SENECA, SHELBY, STARK, TUSCARAWAS, UNION, VAN WERT, VINTON, WARREN, WASHINGTON, WAYNE, WILLIAMS, WOOD, and YANDOT COUNTIES

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
GROUP 1	$ 44.14	16.41
GROUP 2	$ 44.02	16.41
GROUP 3	$ 42.98	16.41
GROUP 4	$ 41.80	16.41
GROUP 5	$ 36.34	16.41
GROUP 6	$ 45.14	16.41
GROUP 7	$ 45.14	16.41

OPERATING ENGINEER CLASSIFICATIONS

GROUP 1 - Air Compressor on Steel Erection; Barrier Moving Machine; Boiler Operator on Compressor or Generator when mounted on a Rig; Cableway; Combination Concrete Mixer &

Tower; Concrete Plant (over 4 yd. Capacity); Concrete Pump; Crane (All Types, Including Boom Truck, Cherry Picker); Crane-Compact, Track or Rubber over 4,000 lbs. capacity; Cranes-Self Erecting, Stationary, Track or Truck (All Configurations); Derrick; Dragline; Dredge (Dipper, Clam or Suction); Elevating Grader or Euclid Loader; Floating Equipment (All Types); Gradall; Helicopter Crew (Operator-Hoist or Winch); Hoe (all types); Hoisting Engine on Shaft or Tunnel Work; Hydraulic Gantry (Lifting System); Industrial-Type Tractor; Jet Engine Dryer (D8 or D9) Diesel Tractor; Locomotive (Standard Gauge); Maintenance Operator Class A; Mixer, Paving (Single or Double Drum); Mucking Machine; Multiple Scraper; Piledriving Machine (All Types); Power Shovel; Prentice Loader; Quad 9 (Double Pusher); Rail Tamper (with auto lifting & aligning device); Refrigerating Machine (Freezer Operation); Rotary Drill, on Caisson work; Rough Terrain Fork Lift with Winch/Hoist; Side-Boom; Slip-Form Paver; Tower Derrick; Tree Shredder; Trench Machine (Over 24"" wide); Truck Mounted Concrete Pump; Tug Boat; Tunnel Machine and/or Mining Machine; and Wheel Excavator.

GROUP 2 - Asphalt Paver; Automatic Subgrader Machine, Self-Propelled (CMI Type); Bobcat Type and/or Skid Steer Loader with Hoe Attachment Greater than 7,000 lbs.; Boring Machine More than 48""; Bulldozer; Endloader; Hydro Milling Machine; Horizontal Directional Drill (over 50,000 ft. lbs. thrust);Kolman-type Loader (production type-Dirt); Lead Greaseman; Lighting & Traffic Signal Installation Equipment (includes all groups or classifications); Material Transfer Equipment (Shuttle Buggy) Asphalt; Pettibone-Rail Equipment; Power Grader; Power Scraper; Push Cat; Rotomill (all), Grinders & Planers of All types; Trench Machine (24"" wide & under); and Vermeer type Concrete Saw.

GROUP 3 - A-Frame; Air Compressor on Tunnel Work (low pressure); Asphalt Plant Engineer; Bobcat-type and/or Skid Steer Loader with or without Attachments; Highway Drills (all types); Locomotive (narrow gauge); Material Hoist/Elevator; Mixer, Concrete (more than one bag capacity); Mixer, one bag capacity (Side Loader); Power Boiler (Over 15 lbs. Pressure) Pump Operator installing & operating Well Points; Pump (4"" & over discharge); Railroad Tie Inserter/Remover; Roller, Asphalt; Rotovator (lime soil stabilizer); Switch & Tie Tampers (without lifting & aligning device); Utility Operator (Small equipment); and Welding Machines; Artiaculating/straight bed end dumps if assigned (minus $4.00 per hour.

GROUP 4 - Backfiller; Ballast Re-locator; Bars, Joint & Mesh

Installing Machine; Batch Plant; Boring Machine Operator (48"" or less); Bull Floats; Burlap & Curing Machine; Concrete Plant (capacity 4 yd. & under); Concrete Saw (Multiple); Conveyor (Highway); Crusher; Deckhand; Farm-type Tractor with attachments (highway); Finishing Machine; Fireperson, Floating Equipment (all types); Fork Lift; Form Trencher; Hydro Hammer expect masonary; Hydro Seeder; Pavement Breaker; Plant Mixer; Post Driver; Post Hole Digger (Power Auger); Power Brush Burner; Power Form Handling Equipment; Road Widening Trencher; Roller (Brick, Grade & Macadam); Self-Propelled Power Spreader; Self-Propelled Power Subgrader; Steam Fireperson; Tractor (Pulling Sheepfoot, Roller or Grader); and Vibratory Compactor with Integral Power.

GROUP 5 - Compressor (Portable, Sewer, Heavy & Highway); Drum Fireperson (Asphalt Plant); Generator; Masonary Forklift; Inboard-Outboard Motor Boat Launch; Oil Heater (asphalt plant); Oiler/Helper; Power Driven Heater; Power Sweeper & Scrubber; Pump (under 4"" discharge); Signalperson; Tire Repairperson; VAC/ALLS; Cranes - Compact, track or rubber under 4,000 pound capacity; fueling and greasing; and Chainmen.

GROUP 6 - Master Mechanic & Boom from 150 to 180.

GROUP 7 - Boom from 180 and over.

ENGI0066-023 06/01/2023

COLUMBIANA, MAHONING & TRUMBULL COUNTIES

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 1 - A & B	$ 44.63	24.30
ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 2 - A & B	$ 44.30	24.30
ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 3 - A & B	$ 38.47	24.30
ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 4 - A & B	$ 34.52	24.30
ASBESTOS; HAZARDOUS/TOXIC WASTE PROJECTS		

GROUP 5 - A & B.....$	31.13	24.30
HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 1 - C & D.....$	40.91	24.30
HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 2 - C & D.....$	40.61	24.30
HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 3 - C & D.....$	35.27	24.30
HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 4 - C & D.....$	31.65	24.30
HAZARDOUS/TOXIC WASTE PROJECTS		
GROUP 5 - C & D.....$	28.53	24.30
ALL OTHER WORK		
GROUP 1.....$	37.19	24.30
ALL OTHER WORK		
GROUP 2.....$	36.92	24.30
ALL OTHER WORK		
GROUP 3.....$	32.06	24.30
ALL OTHER WORK		
GROUP 4.....$	28.77	24.30
ALL OTHER WORK		
GROUP 5.....$	25.94	24.30

GROUP 1 - Rig, Pile Driver or Caisson Type; & Rig, Pile Hydraulic Unit Attached

GROUP 2 - Asphalt Heater Planer; Backfiller with Drag Attachment; Backhoe; Backhoe with Shear attached; Backhoe-Rear Pivotal Swing; Batch Plant-Central Mix Concrete; Batch Plant, Portable concrete; Berm Builder-Automatic; Boat Derrick; Boat-Tug; Boring Machine Attached to Tractor; Bullclam; Bulldozer; C.M.I. Road Builder & Similar Type; Cable Placer & Layer; Carrier-Straddle; Carryall-Scraper or Scoop; Chicago Boom; Compactor with Blade Attached; Concrete Saw (Vermeer or similar type); Concrete Spreader Finisher; Combination, Bidwell Machine; Crane; Crane-Electric Overhead; Crane-Rough Terrain; Crane-Side Boom; Crane-Truck; Crane-Tower; Derrick-Boom; Derrick-Car; Digger-Wheel (Not trencher or road widener); Double Nine; Drag Line; Dredge; Drill-Kenny or Similar Type; Easy Pour Median Barrier Machine (or similar type); Electromatic; Frankie Pile; Gradall; Grader; Gurry; Self-Propelled; Heavy Equipment Robotics Operator/Mechanic; Hoist-Monorail; Hoist-Stationary & Mobile Tractor; Hoist, 2 or 3 drum; Horizontal Directional Drill Operator; Jackall; Jumbo

Machine; Kocal & Kuhlman; Land-Seagoing Vehicle; Loader, Elevating; Loader, Front End; Loader, Skid Steer; Locomotive; Mechanic/Welder; Metro Chip Harvester with Boom; Mucking Machine; Paver-Asphalt Finishing Machine; Paver-Road Concrete; Paver-Slip Form (C.M.I. or similar); Place Crete Machine with Boom; Post Driver (Carrier mounted); Power Driven Hydraulic Pump & Jack (When used in Slip Form or Lift Slab Construction); Pump Crete Machine; Regulator-Ballast; Hydraulic Power Unit not attached to Rig for Pile Drillings; Rigs-Drilling; Roto Mill or similar Full Lane (8' Wide & Over); Roto Mill or similar type (Under 8'); Shovel; Slip Form Curb Machine; Speedwing; Spikemaster; Stonecrusher; Tie Puller & Loader; Tie Tamper; Tractor-Double Boom; Tractor with Attachments; Truck-Boom; Truck-Tire; Trench Machine; Tunnel Machine (Mark 21 Java or similar); & Whirley (or similar type)

GROUP 3 - Asphalt Plant; Bending Machine (Pipeline or similar type); Boring machine, Motor Driven; Chip Harvester without Boom; Cleaning Machine, Pipeline Type; Coating Machine, Pipeline Type; Compactor; Concrete Belt Placer; Concrete Finisher; Concrete Planer or Asphalt; Concrete Spreader; Elevator; Fork Lift (Home building only); Fork lift & Lulls; Fork Lift Walk Behind (Hoisting over 1 buck high); Form Line Machine; Grease Truck operator; Grout Pump; Gunnite Machine; Horizontal Directional Drill Locator; Single Drum Hoist with or without Tower; Huck Bolting Machine; Hydraulic Scaffold (Hoisting building materials); Paving Breaker (Self-propelled or Ridden); Pipe Dream; Pot Fireperson (Power Agitated); Refrigeration Plant; Road Widener; Roller; Sasgen Derrick; Seeding Machine; Soil Stabilizer (Pump type); Spray Cure Machine, Self-Propelled; Straw Blower Machine; Sub-Grader; Tube Finisher or Broom C.M.I. or similar type; & Tugger Hoist

GROUP 4 - Air Curtain Destructor & Similar Type; Batch Plant-Job Related; Boiler Operator; Compressor; Conveyor; Curb Builder, self-propelled; Drill Wagon; Generator Set; Generator-Steam; Heater-Portable Power; Hydraulic Manipulator Crane; Jack-Hydraulic Power driven; Jack-Hydraulic (Railroad); Ladavator; Minor Machine Operator; Mixer-Concrete; Mulching Machine; Pin Puller; Power Broom; Pulverizer; Pump; Road Finishing Machine (Pull Type); Saw-Concrete-Self-Propelled (Highway Work); Signal Person; Spray Cure Machine-Motor Powered; Stump Cutter; Tractor; Trencher Form; Water Blaster; Steam Jenny; Syphon; Vibrator-Gasoline; & Welding Machine

GROUP 5 - Brakeperson; Fireperson; & Oiler

IRON0017-002 05/01/2024

ASHTABULA (North of Route 6, starting at the Geauga County Line, proceeding east to State Route 45), CUYAHOGA, ERIE (Eastern 2/3), GEAUGA, HURON (East of a line drawn from the north border through Monroeville & Willard), LAKE, LORAIN, MEDINA (North of Old Rte. #224), PORTAGE (West of a line from Middlefield to Shalersville to Deerfield), and SUMMIT (North of Old Rte. #224, including city limits of Barberton) COUNTIES

	Rates	Fringes
IRONWORKER		
Ornamental, Reinforcing, & Structural	$ 36.83	29.01

IRON0017-010 05/01/2024

ASHTABULA (Eastern part from Lake Erie on the north to route #322 on the south to include Conneaut, Kingsville, Sheffield, Denmark, Dorset, Cherry Valley, Wayne, Monroe, Pierpont, Richmond, Andover & Williamsfield Townships)

	Rates	Fringes
IRONWORKER		
Structural, including metal building erection & Reinforcing	$ 36.83	29.01

IRON0044-001 06/01/2025

ADAMS (Western Part), BROWN, BUTLER (Southern Part), CLERMONT, CLINTON (South of a line drawn from Blanchester to Lynchburg), HAMILTON, HIGHLAND (Excluding eastern one-fifth & portion of county inside lines drawn from Marshall to Lynchburg from the northern county line through E. Monroe to Marshall) and WARREN (South of a line drawn from Blanchester through Morrow to the west county line) COUNTIES

	Rates	Fringes
IRONWORKER, REINFORCING	$ 38.27	23.90

IRON0044-002 06/01/2025

CLINTON (South of a line drawn from Blanchester to Lynchburg), HAMILTON, HIGHLAND (Excluding eastern one-fifth & portion of county inside lines drawn from Marshall to Lynchburg from the northern county line through E. Monroe to Marshall) & WARREN (South of a line drawn from Blanchester through Morrow to the west county line)

	Rates	Fringes
IRONWORKER		
Fence Erector	$ 35.88	23.90
Ornamental; Structural	$ 37.77	23.90

IRON0055-003 07/01/2024

CRAWFORD (Area Between lines drawn from where Hwy #598 & #30 meet through N. Liberty to the northern border & from said Hwy junction point due west to the border), DEFIANCE (S. of a line drawn from where Rte. #66 meets the northern line through Independence to the eastern county border), ERIE (Western 1/3), FULTON, HANCOCK, HARDIN (North of a line drawn from Maysville to a point 4 miles south of the northern line on the eastern line), HENRY, HURON (West of a line drawn from the northern border through Monroeville & Willard), LUCAS, OTTAWA, PUTNAM (East of a line drawn from the northern border down through Miller City to where #696 meets the southern border), SANDUSKY, SENECA, WILLIAMS (East of a line drawn from Pioneer through Stryker to the southern border), WOOD & WYANDOT (North of Rte. #30)

	Rates	Fringes
IRONWORKER		
Fence Erector	$ 26.40	24.62
Flat Road Mesh	$ 29.77	21.30
Tunnels & Caissons Under Pressure	$ 29.77	21.30
All Other Work	$ 35.50	29.20

IRON0147-002 06/01/2025

ALLEN (Northern half), DEFIANCE (Northern part, excluding south of a line drawn from where Rte. #66 meets the northern line through Independence to the eastern county border), MERCER (Northern half), PAULDING, PUTNAM (Western part, excluding east of a line drawn from the northern border down through Miller City to where #696 meets the southern border), VAN WERT, and WILLIAMS (Western part, excluding east of a line drawn from

Pioneer through Stryker to the southern border) COUNTIES

	Rates	Fringes
IRONWORKER	$ 38.00	26.39

IRON0172-002 06/01/2025

CHAMPAIGN (Eastern one-third), CLARK (Eastern one-fourth), COSHOCTON (West of a line beginning at the northwestern county line going through Walhonding & Tunnel Hill to the southern county line), CRAWFORD (South of Rte. #30), DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, HARDIN (Excluding a line drawn from Roundhead to Maysville), HIGHLAND (Eastern one-fifth), HOCKING, JACKSON (Northern half), KNOX, LICKING, LOGAN (Eastern one-third), MADISON, MARION, MORROW, MUSKINGUM (West of a line starting at Adams Mill going to Adamsville & going from Adamsville through Blue Rock to the southern border), PERRY, PICKAWAY, PIKE (Northern half), ROSS, UNION, VINTON and WYANDOT (South of Rte. #30) COUNTIES

	Rates	Fringes
IRONWORKER	$ 40.87	23.15

IRON0207-004 06/01/2025

ASHTABULA (Southern part starting at the Geauga County line), COLUMBIANA (E. of a line from Damascus to Highlandtown), MAHONING (N. of Old Route #224), PORTAGE (E. of a line from Middlefield to Shalersville to Deerfield) & TRUMBULL

	Rates	Fringes
IRONWORKER		
Layout; Sheeter	$ 37.26	28.16
Ornamental; Reinforcing; Structural	$ 36.26	28.16

IRON0290-002 06/01/2025

ALLEN (Southern half), AUGLAIZE, BUTLER (North of a line drawn from east to the west county line going through Oxford, Darrtown & Woodsdale), CHAMPAIGN (Excluding east of a line drawn from Catawla to the point where #68 intersects the northern county line), CLARK (Western two-thirds), CLINTON (Excluding south of a line drawn from Blanchester to

Lynchburg), DARKE, GREENE, HIGHLAND (Inside lines drawn from Marshall to Lynchburg & from the northern county line through East Monroe to Marshall), LOGAN (West of a line drawn from West Liberty to where the northern county line meets the western county line of Hardin), MERCER (Southern half), MIAMI, MONTGOMERY, PREBLE, SHELBY & WARREN (Excluding south of a line drawn from Blanchester through Morrow to the western county line) COUNTIES

	Rates	Fringes
IRONWORKER	$ 37.39	25.35

IRON0549-003 12/01/2022

BELMONT, GUERNSEY, HARRISON, JEFFERSON, MONROE & MUSKINGUM (Excluding portion west of a line starting at Adams Mill going to Adamsville and going from Adamsville through Blue Rock to the south border)

	Rates	Fringes
IRONWORKER	$ 35.19	25.66

IRON0550-004 05/01/2024

ASHLAND, CARROLL, COLUMBIANA (W. of a line from Damascus to Highlandtown), COSHOCTON (E. of a line beginning at NW Co. line going through Walhonding & Tunnel Hill to the South Co. line), HOLMES, HURON (S. of Old Rte. #224), MAHONING (S. of Old Rte. #224), MEDINA (S. of Old Rte. #224), PORTAGE (S. of Old Rte. #224), RICHLAND, STARK, SUMMIT (S. of Old Rte. #224, Excluding city limits of Barberton), TUSCARAWAS, & WAYNE

	Rates	Fringes
Ironworkers:Structural, Ornamental and Reinforcing	$ 34.70	22.88

IRON0769-004 06/01/2025

ADAMS (Eastern Half), GALLIA, JACKSON (Southern Half), LAWRENCE & SCIOTO

	Rates	Fringes

IRONWORKER.....$ 39.70 29.59

IRON0787-003 06/01/2025

ATHENS, MEIGS, MORGAN, NOBLE, and WASHINGTON COUNTIES

	Rates	Fringes
IRONWORKER	$ 36.10	24.65

LABO0265-008 05/01/2024

	Rates	Fringes
LABORER		
ASHTABULA, ERIE, HURON, LORAIN, LUCAS, MAHONING, MEDINA, OTTAWA, PORTAGE, SANDUSKY, STARK, SUMMIT, TRUMBULL & WOOD COUNTIES		
GROUP 1	$ 35.95	14.45
GROUP 2	$ 36.12	14.45
GROUP 3	$ 36.45	14.45
GROUP 4	$ 36.90	14.45
CUYAHOGA AND GEAUGA COUNTIES ONLY: SEWAGE PLANTS, WASTE PLANTS, WATER TREATMENT FACILITIES, PUMPING STATIONS, & ETHANOL PLANTS CONSTRUCTION	$ 38.56	14.45
CUYAHOGA, GEAUGA & LAKE COUNTIES		
GROUP 1	$ 37.18	14.45
GROUP 2	$ 37.35	14.45
GROUP 3	$ 37.68	14.45
GROUP 4	$ 38.13	14.45
REMAINING COUNTIES OF OHIO		
GROUP 1	$ 35.52	14.45
GROUP 2	$ 35.69	14.45
GROUP 3	$ 36.02	14.45
GROUP 4	$ 36.47	14.45

LABORER CLASSIFICATIONS

GROUP 1 - Asphalt Laborer; Carpenter Tender; Concrete Curing Applicator; Dump Man (Batch Truck); Guardrail and Fence Installer; Joint Setter; Laborer (Construction); Landscape Laborer; Mesh Handlers & Placer; Right-of-way Laborer; Riprap Laborer & Grouter; Scaffold Erector; Seal Coating;

Surface Treatment or Road Mix Laborer; Sign Installer; Slurry Seal; Utility Man; Bridge Man; Handyman; Waterproofing Laborer; Flagperson; Hazardous Waste (level D); Diver Tender; Zone Person & Traffic Control

GROUP 2 - Asphalt Raker; Concrete Puddler; Kettle Man Pipeline); Machine Driven Tools (Gas, Electric, Air); Mason Tender; Brick Paver; Mortar Mixer; Power Buggy or Power Wheelbarrow; Paint Striper; Sheeting & Shoring Man; Surface Grinder Man; Plastic Fusing Machine Operator; Pug Mill Operator; & Vacuum Devices (wet or dry); Rodding Machine Operator; Diver; Screwman or Paver; Screed Person; Water Blast, Hand Held Wand; Pumps 4"" & Under (Gas, Air or Electric) & Hazardous Waste (level C); Air Track and Wagon Drill; Bottom Person; Cofferdam (below 25 ft. deep); Concrete Saw Person; Cutting with Burning Torch; Form Setter; Hand Spiker (Railroad); Pipelayer; Tunnel Laborer (without air) & Caisson; Underground Person (working in Sewer and Waterline, Cleaning, Repairing & Reconditioning); Sandblaster Nozzle Person; & Hazardous Waste (level B)

GROUP 3 - Blaster; Mucker; Powder Person; Top Lander; Wrencher (Mechanical Joints & Utility Pipeline); Yarner; Hazardous Waste (level A); Concrete Specialist; Concrete Crew in Tunnels (With Air-pressurized - $1.00 premium); Curb Setter & Cutter; Grade Checker; Utility Pipeline Tapper; Waterline; and Caulker

GROUP 4 - Miner (With Air-pressurized - $1.00 premium); & Gunite Nozzle Person

TUNNEL LABORER WITH AIR-PRESSURIZED ADD $1.00 TO BASE RATE

SIGNAL PERSON WILL RECEIVE THE RATE EQUAL TO THE RATE PAID THE LABORER CLASSIFICATION FOR WHICH HE OR SHE IS SIGNALING.

PAIN0006-002 05/01/2023

ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN, PORTAGE (N. of the East-West Turnpike) & SUMMIT (N. of the East-West Turnpike)

	Rates	Fringes
PAINTER		
COMMERCIAL NEW WORK; REMODELING; & RENOVATIONS		
GROUP 1	$ 30.75	18.95
GROUP 2	$ 31.15	18.95

GROUP 3	$ 31.45	18.95
GROUP 4	$ 37.01	18.95
COMMERCIAL REPAINT		
GROUP 1	$ 29.25	18.95
GROUP 2	$ 29.65	18.95
GROUP 3	$ 29.95	18.95

PAINTER CLASSIFICATIONS - COMMERCIAL NEW WORK; REMODELING; & RENOVATIONS

GROUP 1 - Brush; & Roller

GROUP 2 - Sandblasting & Buffing

GROUP 3 - Spray Painting; Closed Steel Above 55 feet; Bridges & Open Structural Steel; Tanks - Water Towers; Bridge Painters; Bridge Riggers; Containment Builders

GROUP 4 - Bridge Blaster

PAINTER CLASSIFICATIONS - COMMERCIAL REPAINT

GROUP 1 - Brush; & Roller

GROUP 2 - Sandblasting & Buffing

GROUP 3 - Spray Painting

PAIN0007-002 07/01/2025

FULTON, HENRY, LUCAS, OTTAWA (Excluding Allen, Bay, Bono, Catawba Island, Clay Center, Curtice, Danbury, Eagle Beach, Elliston, Elmore, Erie, Fishback, Gem Beach & Genova) & WOOD

	Rates	Fringes
PAINTER		
NEW COMMERCIAL WORK		
GROUP 1	$ 33.66	23.88
GROUP 2	$ 34.66	23.88
GROUP 3	$ 34.66	23.88
GROUP 4	$ 34.66	23.88
GROUP 5	$ 34.66	23.88
GROUP 6	$ 34.66	23.88
GROUP 7	$ 34.66	23.88
GROUP 8	$ 34.66	23.88
GROUP 9	$ 34.66	23.88

REPAINT IS 90% OF JR

PAINTER CLASSIFICATIONS

GROUP 1 - Brush; Spray & Sandblasting Pot Tender

GROUP 2 - Refineries & Refinery Tanks; Surfaces 30 ft. or over where material is applied to or labor performed on above ground level (exterior), floor level (interior)

GROUP 3 - Swing Stage & Chair

GROUP 4 - Lead Abatement

GROUP 5 - All Methods of Spray

GROUP 6 - Solvent-Based Catalized Epoxy Materials of 2 or More Component Materials, to include Solvent-Based Conversion Varnish (excluding water based)

GROUP 7 - Spray Solvent Based Material; Sand & Abrasive Blasting

GROUP 8 - Towers; Tanks; Bridges; Stacks Over 30 Feet

GROUP 9 - Epoxy Spray (excluding water based)

PAIN0012-008 05/01/2019

BUTLER COUNTY

	Rates	Fringes
PAINTER		
GROUP 1	$ 21.95	10.20
GROUP 2	$ 25.30	10.20
GROUP 3	$ 25.80	10.20
GROUP 4	$ 26.05	10.20
GROUP 5	$ 26.30	10.20

PAINTER CLASSIFICATIONS

GROUP 1: Bridge Equipment Tender; Bridge/Containment Builder

GROUP 2: Brush & Roller

GROUP 3: Spray

GROUP 4: Sandblasting; & Waterblasting

GROUP 5: Elevated Tanks; Steeplejack Work; Bridge; & Lead Abatement

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PAIN0012-010 05/01/2019

BROWN, CLERMONT, CLINTON, HAMILTON & WARREN

	Rates	Fringes
PAINTER		
HEAVY & HIGHWAY BRIDGES-GUARDRAILS-LIGHTPOLES-STRIPING		
Bridge Equipment Tender and Containment Builder	$ 21.95	10.20
Bridges when highest point of clearance is 60 feet or more; & Lead Abatement Projects	$ 26.30	10.20
Brush & Roller	$ 25.30	10.20
Sandblasting & Hopper Tender; Water Blasting	$ 26.05	10.20
Spray	$ 25.80	10.20

PAIN0093-001 12/01/2024

ATHENS, GUERNSEY, HOCKING, MONROE, MORGAN, NOBLE and WASHINGTON COUNTIES

	Rates	Fringes
PAINTER		
Bridges; Locks; Dams; Tension Towers; & Energized Substations	$ 36.44	24.46
Power Generating Facilities	$ 33.29	24.46

PAIN0249-002 05/01/2025

CLARK, DARKE, GREENE, MIAMI, MONTGOMERY & PREBLE

	Rates	Fringes
PAINTER		
GROUP 1 - Brush & Roller	$ 29.15	13.97
GROUP 2 - Swing, Scaffold		

Bridges; Structural Steel; Open Acid Tank; High Tension Electrical Equipment; & Hot Pipes	$ 33.09	13.97
GROUP 3 - Spray; Sandblast; Steamclean; Lead Abatement	$ 29.90	13.97
GROUP 4 - Steeplejack Work	$ 30.10	13.97
GROUP 5 - Coal Tar	$ 30.65	13.97
GROUP 6 - Bridge Equipment Tender & or Containment Builder	$ 37.86	13.97
GROUP 7 - Tanks, Stacks & Towers	$ 33.86	13.97
GROUP 8 - Bridge Blaster, Rigger	$ 40.86	13.97

PAIN0356-002 09/01/2009

KNOX, LICKING, MUSKINGUM, and PERRY

	Rates	Fringes
PAINTER		
Bridge Equipment Tenders and Containment Builders	$ 27.93	7.25
Bridges; Blasters; andRiggers	$ 34.60	7.25
Brush and Roller	$ 20.93	7.25
Sandblasting; Steam Cleaning; Waterblasting; and Hazardous Work	$ 25.82	7.25
Spray	$ 21.40	7.25
Structural Steel and Swing Stage	$ 25.42	7.25
Tanks; Stacks; and Towers	$ 28.63	7.25

PAIN0438-002 12/01/2023

BELMONT, HARRISON and JEFFERSON COUNTIES

	Rates	Fringes
PAINTER		
Bridges, Locks, Dams, Tension Towers & Energized Substations	$ 36.09	19.49
Power Generating Facilities	$ 32.94	19.49

PAIN0476-001 06/01/2025

COLUMBIANA, MAHONING, and TRUMBULL COUNITES

	Rates	Fringes
PAINTER		
GROUP 1	$ 30.64	18.36
GROUP 2	$ 40.27	18.36
GROUP 3	$ 40.27	18.36
GROUP 4	$ 31.14	18.36
GROUP 5	$ 31.29	18.36
GROUP 6	$ 35.27	18.36
GROUP 7	$ 32.64	18.36

PAINTER CLASSIFICATIONS:

GROUP 1: Painters, Brush & Roller

GROUP 2: Bridges

GROUP 3: Structural Steel

GROUP 4: Spray, Except Bar Joist/Deck

GROUP 5: Epoxy/Mastic; Spray- Bar Joist/Deck; Working Above 50 Feet; and Swingstages

GROUP 6: Tanks; Sandblasting

GROUP 7: Towers; Stacks

PAIN0555-002 01/01/2025

ADAMS, HIGHLAND, JACKSON, PIKE & SCIOTO

	Rates	Fringes
PAINTER		
GROUP 1	$ 33.32	21.54
GROUP 2	$ 35.02	21.54
GROUP 3	$ 36.72	21.54
GROUP 4	$ 40.03	21.54

PAINTER CLASSIFICATIONS

GROUP 1 - Containment Builder

GROUP 2 - Brush; Roller; Power Tools, Under 40 feet

GROUP 3 - Sand Blasting; Spray; Steam Cleaning; Pressure Washing; Epoxy & Two Component Materials; Lead Abatement; Hazardous Waste; Toxic Materials; Bulk & Storage Tanks of 25,000 Gallon Capacity or More; Elevated Tanks

GROUP 4 - Stacks; Bridges

PAIN0639-001 05/01/2011

	Rates	Fringes
Sign Painter & Erector	$ 20.61	3.50+a+b+c

FOOTNOTES: a. 7 Paid Holidays: New Year's Day; Memorial Day; July 4th; Labor Day; Thanksgiving Day; Christmas Day & 1 Floating Day
b. Vacation Pay: After 1 year's service - 5 days' paid vacation; After 2, but less than 10 years' service - 10 days' paid vacation; After 10, but less than 20 years' service - 15 days' paid vacation; After 20 years' service - 20 days' paid vacation
c. Funeral leave up to 3 days maximum paid leave for death of mother, father, brother, sister, spouse, child, mother-in-law, father-in-law, grandparent and inlaw provided employee attends funeral

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PAIN0788-002 06/01/2024

ASHLAND, CRAWFORD, ERIE, HANCOCK, HURON, MARION, MORROW, OTTAWA (Allen, Bay, Bono, Catawba Island, Clay Center, Curtice, Danbury, Eagle Beach, Elliston, Elmore, Erie, Fishback, Gem Beach & Genoa), RICHLAND, SANDUSKY, SENECA & WYANDOT

	Rates	Fringes
PAINTER		
Brush & Roller	$ 29.13	17.52
Structural Steel	$ 30.73	17.52

WINTER REPAINT: Between December 1 to March 31 - 90%JR

$.50 PER HOUR SHALL BE ADDED TO THE RATE OF PAY FOR THE CLASSIFICATION OF WORK:

While working swingstage, boatswain chair, needle beam and horizontal cable. While operating sprayguns, sandblasting, cobblasting and high pressure waterblasting (4000psi).

$1.00 PER HOUR SHALL BE ADDED TO THE RATE OF PAY FOR THE CLASSIFICATION OF WORK:

For the application of catalized epoxy, including latex epoxy that is deemed hazardous, lead abatement, or for work or material where special precautions beyond normal work duties must be taken. For working on stacks, tanks, and towers over 40 feet in height.

PAIN0813-005 12/01/2008

GALLIA, LAWRENCE, MEIGS & VINTON

	Rates	Fringes
PAINTER		
Base Rate	$ 24.83	10.00
Bridges, Locks, Dams & Tension Towers	$ 27.83	10.00

PAIN0841-001 07/01/2025

MEDINA, PORTAGE (South of and including Ohio Turnpike), and SUMMIT (South of and including Ohio Turnpike) COUNTIES

	Rates	Fringes
Painters:		
GROUP 1	$ 31.93	18.15
GROUP 2	$ 32.58	18.15
GROUP 3	$ 32.68	18.15
GROUP 4	$ 32.78	18.15
GROUP 5	$ 33.18	18.15
GROUP 6	$ 38.60	18.15
GROUP 7	$ 33.18	18.15

PAINTER CLASSIFICATIONS:

GROUP 1 - Brush, Roller & Paperhanger

GROUP 2 - Epoxy Application

GROUP 3 - Swing Scaffold, Bosum Chair, & Window Jack

GROUP 4 - Spray Gun Operator of Any & All Coatings

GROUP 5 - Sandblast, Painting of Standpipes, etc. from

Scaffolds, Bridge Work and/or Open Structural Steel, Standpipes and/or Water Towers

GROUP 6 - Public & Commerce Transportation, Steel or Galvanized, Bridges, Tunnels & Related Support Items (concrete)

GROUP 7 - Synthetic Exterior, Drywall Finisher and/or Taper, Drywall Finisher and Follow-up Man Using Automatic Tools

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PAIN0841-002 07/01/2025

CARROLL, COSHOCTON, HOLMES, STARK, TUSCARAWAS & WAYNE

	Rates	Fringes
PAINTER		
Bridges; Towers, Poles & Stacks; Sandblasting Steel; Structural Steel & Metalizing	$ 33.18	18.15
Brush & Roller	$ 31.93	18.15
Spray; Tank Interior & Exterior	$ 32.78	18.15

PAIN1020-002 07/01/2025

ALLEN, AUGLAIZE, CHAMPAIGN, DEFIANCE, HARDIN, LOGAN, MERCER, PAULDING, PUTNAM, SHELBY, VAN WERT, and WILLIAMS COUNTIES

	Rates	Fringes
PAINTER		
Brush & Roller	$ 27.59	18.54
Drywall Finishing & Taping	$ 28.34	18.54
Lead Abatement	$ 29.34	18.54
Spray, Sandblasting Pressure Cleaning, & Refinery	$ 28.34	18.54
Swing Stage, Chair, Spiders, & Cherry Pickers	$ 27.84	18.54
Wallcoverings	$ 28.34	18.54

All surfaces 40 ft. or over where material is applied to or labor performed on, above ground level (exterior), floor level (interior) - $.50 premium

Applying Coal Tar Products - $1.00 premium

PAIN1275-002 05/01/2025

DELAWARE, FAIRFIELD, FAYETTE, FRANKLIN, MADISON, PICKAWAY, ROSS & UNION

	Rates	Fringes
PAINTER		
Bridges	$ 37.26	15.16
Brush; Roller	$ 30.20	15.16
Sandblasting; Steamcleaning; Waterblasting (3500 PSI or Over)& Hazardous Work	$ 32.35	15.16
Spray	$ 32.15	15.16
Stacks; Tanks; & Towers	$ 34.46	15.16
Structural Steel & Swing Stage	$ 30.50	15.16

PLAS0109-001 06/01/2025

MEDINA, PORTAGE, STARK, and SUMMIT COUNTIES

	Rates	Fringes
PLASTERER	$ 33.00	23.83

PLAS0109-003 06/01/2025

CARROLL, HOLMES, TUSCARAWAS, and WAYNE COUNTIES

	Rates	Fringes
PLASTERER	$ 33.00	23.83

PLAS0132-002 07/01/2025

BROWN, BUTLER, CLERMONT, HAMILTON, HIGHLAND, WARREN COUNTIES

	Rates	Fringes
PLASTERER	$ 31.35	17.65

PLAS0404-002 05/01/2018

ASHTABULA, CUYAHOGA, GEAUGA, AND LAKE COUNTIES

	Rates	Fringes
PLASTERER	$ 29.63	17.11

PLAS0404-003 05/01/2018

LORAIN COUNTY

	Rates	Fringes
PLASTERER	$ 28.86	17.11

PLAS0526-022 05/01/2018

COLUMBIANA, MAHONING, and TRUMBULL COUNTIES

	Rates	Fringes
PLASTERER	$ 28.86	17.11

PLAS0526-023 05/01/2018

BELMONT, HARRISON, and JEFFERSON COUNTIES

	Rates	Fringes
PLASTERER	$ 28.21	17.11

PLAS0886-001 07/01/2025

FULTON, HANCOCK, HENRY, LUCAS, PUTNAM, and WOOD COUNTIES

	Rates	Fringes
PLASTERER	$ 36.65	25.60

PLAS0886-003 07/01/2025

DEFIANCE, ERIE, HURON, OTTAWA, PAULDING, SANDUSKY, and SENECA

	Rates	Fringes
PLASTERER	$ 36.65	25.60

PLAS0886-004 07/01/2025

ALLEN, AUGLAIZE, HARDIN, LOGAN, MERCER, and VAN WERT

	Rates	Fringes

PLASTERER.....$ 35.29 23.07

PLUM0042-002 07/01/2025

ASHLAND, CRAWFORD, ERIE, HURON, KNOX, LORAIN, MORROW, RICHLAND & WYANDOT

	Rates	Fringes
Plumber, Pipefitter, Steamfitter	$ 43.02	26.45

PLUM0050-002 06/30/2025

DEFIANCE, FULTON, HANCOCK, HENRY, LUCAS, OTTAWA, PAULDING, PUTNAM, SANDUSKY, SENECA, WILLIAMS & WOOD

	Rates	Fringes
Plumber, Pipefitter, Steamfitter	$ 51.00	32.56

PLUM0055-003 05/05/2025

ASHTABULA, CUYAHOGA, GEAUGA, LAKE, MEDINA (N. of Rte. #18 & Smith Road) & SUMMIT (N. of Rte. #303, including the corporate limits of the city of Hudson)

	Rates	Fringes
PLUMBER	$ 44.86	30.03

PLUM0083-001 07/01/2023

BELMONT & MONROE (North of Rte. #78)

	Rates	Fringes
Plumber and Steamfitter	$ 35.94	37.35

PLUM0094-002 05/01/2025

CARROLL (Northen Half), STARK, and WAYNE COUNTIES

	Rates	Fringes
PLUMBER/PIPEFITTER	$ 47.48	27.14

PLUM0120-002 05/01/2025

ASHTABULA, CUYAHOGA, GEAUGA, LAKE, LORAIN (the C.E.I. Power House in Avon Lake), MEDINA (N. of Rte. #18) & SUMMIT (N. of #303)

	Rates	Fringes
PIPEFITTER	$ 49.17	28.55

PLUM0162-002 06/01/2024

CHAMPAIGN, CLARK, CLINTON, DARKE, FAYETTE, GREENE, MIAMI, MONTGOMERY & PREBLE

	Rates	Fringes
Plumber, Pipefitter, Steamfitter	$ 43.05	27.18

PLUM0168-002 06/01/2025

MEIGS, MONROE (South of Rte. #78), MORGAN (South of Rte. #78) & WASHINGTON

	Rates	Fringes
PLUMBER/PIPEFITTER	$ 40.92	37.20

PLUM0189-002 06/01/2024

DELAWARE, FAIRFIELD, FRANKLIN, HOCKING, LICKING, MADISON, MARION, PERRY, PICKAWAY, ROSS & UNION

	Rates	Fringes
Plumber, Pipefitter, Steamfitter	$ 43.25	26.94

PLUM0219-002 06/01/2025

MEDINA (Rte. #18 from eastern edge of Medina Co., west to eastern corporate limits of the city of Medina, & on the county road from the west corporate limits of Medina running due west to and through community of Risley to the western edge of

Medina County - All territory south of this line), PORTAGE, and SUMMIT (S. of Rte. #303) COUNTIES

	Rates	Fringes
Plumber and Steamfitter.....	$ 46.87	28.39

PLUM0392-002 06/01/2025

BROWN, BUTLER, CLERMONT, HAMILTON & WARREN

	Rates	Fringes
PLUMBER/PIPEFITTER.....	$ 43.30	27.40

PLUM0396-001 06/01/2025

COLUMBIANA (Excluding Washington & Yellow Creek Townships & Liverpool Twp. - Secs. 35 & 36 - West of County Road #427), MAHONING and TRUMBULL COUNTIES

	Rates	Fringes
PLUMBER/PIPEFITTER.....	$ 40.55	29.25

PLUM0495-002 06/01/2025

CARROLL (Rose, Monroe, Union, Lee, Orange, Perry & Loudon Townships), COLUMBIANA (Washington & Yellow Creek Townships & Liverpool Township, Secs. 35 & 36, West of County Rd. #427), COSHOCTON, GUERNSEY, HARRISON, HOLMES, JEFFERSON, MORGAN (South to State Rte. #78 & from McConnelsville west on State Rte. #37 to the Perry County line), MUSKINGUM, NOBLE, and TUSCARAWAS COUNTIES

	Rates	Fringes
Plumber, Pipefitter, Steamfitter.....	$ 39.32	37.60

PLUM0577-002 06/01/2025

ADAMS, ATHENS, GALLIA, HIGHLAND, JACKSON, LAWRENCE, PIKE, SCIOTO & VINTON

	Rates	Fringes

Plumber, Pipefitter,
Steamfitter.....$ 42.65 28.56

PLUM0776-002 07/01/2025

ALLEN, AUGLAIZE, HARDIN, LOGAN, MERCER, SHELBY and VAN WERT COUNTIES

	Rates	Fringes
Plumber, Pipefitter, Steamfitter	$ 42.76	30.81

TEAM0377-003 05/01/2025

STATEWIDE, EXCEPT CUYAHOGA, GEAUGA & LAKE

	Rates	Fringes
TRUCK DRIVER		
GROUP 1	$ 34.26	18.85
GROUP 2	$ 35.26	18.85

TRUCK DRIVER CLASSIFICATIONS

GROUP 1 - Asphalt Distributor; Batch; 4- Wheel Service; 4-Wheel Dump; Oil Distributor & Tandem

GROUP 2 - Tractor-Trailer Combination: Fuel; Pole Trailer; Ready Mix; Semi-Tractor; & Asphalt Oil Spraybar Man When Operated From Cab; 5 Axles & Over; Belly Dump; End Dump; Articulated Dump; Heavy Duty Equipment; Low Boy; & Truck Mechanic

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TEAM0436-002 05/01/2025

CUYAHOGA, GEAUGA & LAKE

	Rates	Fringes
TRUCK DRIVER		
GROUP 1	$ 34.92	19.30
GROUP 2	$ 35.73	19.30

GROUP 1: Straight & Dump, Straight Fuel

GROUP 2: Semi Fuel, Semi Tractor, Euclids, Darts, Tank,

Asphalt Spreaders, Low Boys, Carry-All, Tourna-Rockers, Hi-Lifts, Extra Long Trailers, Semi-Pole Trailers, Double Hook-Up Tractor Trailers including Team Track & Railroad Siding, Semi-Tractor & Tri-Axle Trailer, Tandem Tractor & Tandem Trailer, Tag Along Trailer, Expandable Trailer or Towing Requiring Road Permits, Ready-Mix (Agitator or Non-Agitator), Bulk Concrete Driver, Dry Batch Truck, Articulated End Dump

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination

c) an initial WHD letter setting forth a position on
a wage determination matter
d) an initial conformance (additional classification
and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board

U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION"

SECTION 01 11 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:

1. Scope of work.
2. Applicable specifications and drawings.
3. Definitions.
4. Equipment list.
5. Detailed work schedule.
6. Use of premises.
7. Work restrictions.
8. Working days.
9. Commencement.
10. Job meetings.
11. Confined space entry.
12. Water supply.
13. Site conditions.
14. Notice to residents.
15. Damage to city and private property.
16. Maintenance of traffic.
17. Removal of equipment that becomes stuck in a sewer.
18. Observed failure during sewer inspections.
19. Protection of trees.
20. Fencing.

21. Submittals

B. Related Requirements:

1. In addition to the General Conditions for Construction, these Supplemental Conditions are applicable to the Work of the Contract.

C. SCOPE OF WORK:

1. The Contractor shall furnish all labor, equipment, supplies, and supervision of labors necessary to complete the work as it pertains to the Consent Decree Control Measure #8 Phase #1 Sewer Rehabilitation Project in the City of Elyria, Ohio.

2. The Work to be done under the Contract shall consist of sewer rehabilitation by installation of CIPP liners and related work.

3. The major components of the Work are identified in the Rehabilitation Table and are summarized as follows:

a. Sewer cleaning and CCTV video inspection;

b. Internal sewer preparation;

c. Manhole rehabilitation;

d. Flow control (sewer and sewer services);

e. Internal point repair by partial lining;

f. Full segment lining by CIPP;

g. Contingency lateral point repairs;

h. Lateral lining by T-Liner;

i. Vacuum inserted sewer clean-out, and

j. Surface restoration, site clean-up and demobilization

4. Work under this contract is required under a Consent Decree between the City of Elyria and The United States Department of Justice, United States Environmental Protection Agency, and the Ohio Attorney General. A copy of the Consent Decree can be found on the City of Elyria Website at https://www.cityofelyria.org/wp-content/uploads/2023/03/Elyria_Consent_Decree__Effective_1.10.2023.pdf

1.02 APPLICABLE SPECIFICATIONS, TABLES, AND FIGURES

A. These Specifications shall apply to the Work.

B. The included table and figures shall apply to the work.

C. The following are applicable to the Work:

Reference	Reference Title
Table 1	Rehabilitation Table
Figure 1	Rehabilitation Overview Maps
Figure 2	Rehabilitation Detailed Maps

1.03 DEFINITIONS:

A. When used in this contract:

1. "AVI": which stands for Audio Video Interleave, developed by Microsoft© is the acronym given to a family of multimedia container formats as part of its video for Windows© software.

2. "CCTV Inspection" means an operation necessary to complete a high-definition, true-color visual inspection for verification of existing internal sewer line conditions.

3. "HDD": Portable Hard Disk Drive. For the purposes of this specification, HDD shall be written in accordance with the ISO-9660 Level 2 specifications.

4. "MPEG": which stands for Moving Pictures Expert Group, is the acronym given to a family of international standards used for coding audio-visual information in a digital compressed format.

5. "NASSCO" means "National Association of Sewer Service Companies" which is the accepted North American standard for sewer condition coding and assessment.

6. "PACP" means Pipeline Assessment Certification Program which is the accepted NASSCO certification program for pipeline inspections.

B. For definitions not listed herein, consult the respective specification sections for additional terminology and requirements.

1.04 EQUIPMENT LIST

A. The Contractor shall provide the Engineer with a complete list of the equipment which the Contractor proposes to utilize at least fifteen (15) Business Days prior to the commencement of any Work on the Site.

B. The Contractor is strongly encouraged to keep redundant equipment on site. Any downtime due to equipment failure will be at the Contractor's own expense.

1.05 DETAILED WORK SCHEDULE

A. The Contractor shall provide the Engineer with a detailed work schedule at least fifteen (15) Business Days prior to the commencement of any Work on the Site.

B. The detailed work schedule shall consist of the following:

1. a critical path method (C.P.M.) schedule for the Work;

2. a Gantt chart for the Work based on the C.P.M. schedule;

3. a Traffic Control Plan that identifies locations and approximate timing of proposed lane closures and parking restrictions; and

4. a detailed deployment schedule for all crews for the Work at each site.

all acceptable to the Engineer.

1.06 USE OF PREMISES:

A. The Contractor shall not trespass upon or in any way disturb private property without first obtaining written permission from the Owner to do so. A copy of such written permission shall be furnished to the Owner prior to accessing the site.

B. It shall be the Contractor's responsibility to work equipment around poles, trees, or other obstructions and to do so at his own expense.

C. If the Contractor finds it necessary to obtain additional working area, it shall be the Contractor's responsibility for its acquisition.

D. The Contractor shall, at no additional expense, restore such property to the full satisfaction of the Owner and shall obtain from the Owner a written release stating that restoration has been satisfactorily made. A copy of the completed written release shall be furnished to the Owner prior to payment.

E. All items within the street right-of-way or sewer easement shall be removed, or removed and replaced, or restored as directed by the Owner.

F. Keep driveways, sidewalks, parking garage, loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

1.07 WORK RESTRICTIONS:

A. Work Restrictions, General: Comply with restrictions on construction operations.

B. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

C. On-Site Work Hours: Working hours shall take place only between the hours of 7:00 a.m. to 8:00 p.m ., excluding Saturdays, Sundays, and legal holidays. Work outside the above time periods will be permitted only with the approval from the City.

D. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than 48 hours in advance of proposed utility interruptions.

2. Obtain Owner's written permission before proceeding with utility interruptions.

E. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Engineer not less than 48 hours in advance of proposed disruptive operations.

2. Obtain Engineer's written permission before proceeding with disruptive operations.

1.08 COMMENCEMENT

A. The Contractor shall not commence any Work until in receipt of an award letter from the Award Authority authorizing the commencement of the Work.

B. The Contractor shall not commence any Work on the Site until:

1. The Engineer has confirmed receipt and approval of:

a. the equipment list specified in 1.04; and

b. the detailed work schedule specified in 1.05.

2. The Contractor has attended a pre-construction meeting with the Engineer, or the Engineer has waived the requirement for a pre-construction meeting.

1.09 JOB MEETINGS

A. As needed job meetings will be held. These meetings shall be attended by a minimum of one representative of the Engineer, one representative of the City and one representative of the Contractor. Each representative shall be a responsible person capable of expressing the position of the Engineer, the City, and the Contractor respectively on any matter discussed at the meeting including the Work schedule and the need to make any revisions to the Work schedule. The progress of the Work will be reviewed at each of these meetings.

B. The Engineer reserves the right to cancel any job meeting or call additional job meetings whenever he/she deems it necessary.

1.10 CONFINED SPACE ENTRY

A. The Contractor shall be aware that Hydrogen Sulfide Gas is present in all underground structures connected to the City's sewer systems and has been known to accumulate in concentrations sufficient to cause serious harm or death to personnel who are not using adequate Personal Protective Equipment.

B. The Contractor's attention is drawn to the Occupational Safety and Health Administration and the Regulations and Guidelines there-under pertaining to Confined Entry Work and in particular the requirements for conducting hazard/risk assessments and providing personal protective equipment (PPE).

1.11 WATER SUPPLY

A. Water supply for the Work may be taken from City of Elyria hydrants at no cost in accordance with the following:

B. Only use hydrants approved by the City of Elyria.

C. Coordinate with the City of Elyria prior to using any hydrant and obtain approval for each location.

D. Follow all directions, procedures, and regulations established by the City of Elyria for hydrant use, including any restrictions on flow rates, backflow prevention, and connection methods

E. The Contractor shall take all necessary precautions to prevent freezing of hydrants and related appurtenances for hydrants in their control and shall be responsible to pump out hydrants turned off by Emergency Services. All costs associated with heating and hoarding shall be included in the price of "Sewer Cleaning" and no separate measurement or payment will be made.

F. If a hydrant or appurtenance is damaged due to freezing or improper turn-on or turn-off procedures while in the Contractor's control, City of Elyria Water Department will assess the damage and determine if City of Elyria Water Department will repair the damage or if the Contractor will be responsible to repair the damage. Repairs completed by the Contractor will be at the Contractor's expense.

G. Direct hook-up of sewer flushing equipment to a hydrant is not permitted.

H. City of Elyria may instruct the Contractor to make other arrangements for hydrant turn-ons and turn-offs.

1.12 SITE CONDITIONS

A. The City's geographical location results in highly variable seasonal temperatures that may affect construction. During winter, the impact of low temperatures must be considered for construction methods, equipment operation and rates of production.

B. The Engineer shall communicate to the Bidder, in good time during the Contract, all other City and third-party projects or events that may occur in the area and concurrently to the Work. The successful Bidder will be required to adjust the cleaning and inspection program and operations away from the affected locations as necessary.

1.13 NOTICES TO RESIDENTS

A. The Contractor shall deliver notices approved by the Engineer to residents on the affected sewer lines 48 hours prior to work being performed. Additionally, the Contractor shall knock on affected residents' doors to notify them working the day the work is performed.

B. The notices will be in effect for a 72-hour period which the Contractor will indicate with dates stamped on the envelope. The Contractor shall make every effort to complete the affected sewer lines within the notification window.

1.14 DAMAGE TO CITY AND PRIVATE PROPERTY

A. All damage to City and private property caused by any operations under this contract is the responsibility of the Contractor. The Contractor shall repair all damaged property to the satisfaction of the Engineer. All costs associated with these repairs shall be at the Contractors own expense.

B. Notify the Engineer immediately when damage to property occurs.

C. The Contractor shall provide written reports to the Engineer for each property attended for investigation of damage. Reports shall include photographs of all damage, dates and times, verbal or written agreements with property owner and all actions taken or proposed to rectify the damage. Reports shall be submitted to the Engineer within 24 hours of attending the property.

D. Sewers may be in easements through private property or City owned parklands and right-of-ways where no paved access may exist. It will be the Contractors responsibility to identify these sewers and arrange for access and to restore any surface damage to private and City owned property to the satisfaction of the Engineer. All access plans must be approved by the Engineer.

E. Sewer backup or "blow-back" on private property resulting from any operation under this contract is not acceptable and shall be avoided at all costs. It is expected that where this possibility exists the Contractor shall take appropriate measures such as making modifications to approach and procedure.

F. Clean-up of affected residences shall be done by cleaning professionals. Under no circumstances are cleaning equipment operators to enter residences unless they are neat and presentable, and the Engineer has received a Criminal Record Search for that individual.

G. Where actual sewage or “grey water” has flooded private property, the Contractor shall immediately clean and disinfect all affected areas as well as flush all weeping tile. The Contractor shall immediately hire an independent IICRC certified water damage or flood restoration contractor to assess any damage to contaminated building materials such as drywall, insulation, carpets, weeping tile, or sub-floors, and immediately make any required repairs.

H. If a residence is uninhabitable as a result of a sewer back-up the Contractor shall pay for reasonable hotel accommodations and meals for all affected residents.

I. The Contractor shall provide the Engineer with a local 24-hour contact number to arrange for immediate clean-up and repair of private property.

1.15 MAINTENANCE OF TRAFFIC

A. The Contractor shall comply with all applicable traffic control standards, including ODOT 614, the Ohio Manual of Uniform Traffic Control Devices (O.M.U.T.C.D.), and the Federal Highway Administration (FHWA) Manual of Uniform Traffic Control Devices for Streets and Highways, as well as all state and local requirements. Prior to commencing any work, the Contractor shall ensure that all standard barricades, warning signs, markers, and other traffic control devices are installed in acceptable positions and conform to the above standards. The Contractor assumes full responsibility and liability for strict adherence to these requirements to maintain traffic and public safety.

B. Two-way traffic shall be maintained at all times unless a closure and detour is deemed necessary due to traffic conditions or the position of manholes within or between lanes. In such cases, the Contractor shall notify the Engineer in writing prior to mobilization and submit a detour plan for approval. Emergency traffic blocking is permitted only when unavoidable; the Contractor shall immediately notify the Engineer, Fire Department, Police Department, and Service Departments.

C. Dedicated flaggers are required for all work on East Broad Street, Henry Street, and REF 8A and 8B repairs on Concord Avenue. The Contractor shall also maintain local traffic at all times and minimize inconvenience to abutting property owners.

D. The Contractor shall obtain all permits required for maintenance of traffic and coordinate with the Engineer and appropriate authorities for any closures or detours.

E. The portion of pavement not affected by the work shall be kept clear of all material and equipment at all times.

F. The Contractor shall hold harmless the Owner and all its representatives from all suits, actions, or claims of any character brought on account of any injuries or damages sustained by any person or property in the performance of this Contract.

G. The cost of all traffic control devices and the maintenance of traffic shall be incidental to the Contract and included in other bid items; no separate payment will be made.

1.16 REMOVAL OF EQUIPMENT THAT BECOMES STUCK IN A SEWER

A. Advise the Engineer immediately if equipment becomes stuck in a sewer. Attempt to remove equipment that is stuck using trenchless means and methods for at least 4 hours. Advise the Engineer if the equipment cannot be freed after 4 hours. If after 4 hours the equipment cannot be freed, the Contractor shall work with the Engineer to develop a point repair plan at the contractor's expense.

B. It shall be the Contractor's responsibility to remove materials and equipment that has been lodged in the sewer from cleaning, television inspection, or point repair excavations at the Contractor's own expense. No payment or extra time will be given for equipment downtime and attempted equipment retrieval.

C. Point repairs shall include flow control, traffic control, excavations in accordance with OSHA requirements, supporting, protecting, or relocating existing utilities, removal of the existing pipe and stuck equipment, full replacement of the pipe from joint to joint, backfill, and surface restoration as directed and to the satisfactory of the Engineer.

1.17 OBSERVED FAILURE DURING SEWER INSPECTIONS

A. Capture photograph or digital images and notify the Engineer immediately where a flow disparity, clear water infiltration, hole or missing bricks, collapse, void, or deformation > 10% is observed during the sewer or manhole inspection. Provide the captured images to the Engineer at the end of each work day.

B. Place barricades around the location above the sewer or manhole where a void is visible or suspected to be outside of the sewer pipe or manhole and immediately notify the Engineer.

1.18 PROTECTION OF TREES

A. The Contractor shall avoid any unnecessary damage to trees. Branches which overhang the project limits and which interfere with the operation of equipment shall be tied back to avoid damage, if possible. Where injury to branches is unavoidable, the branches shall be sawed off neatly at the trunk or main branch, and the cut area shall be painted with a bituminous based paint formulated for tree wounds.

B. No tree removal will be permitted outside the limits of work indicated on the plans unless authorized. Tree removal is subject to Threatened and Endangered (T&E) bat requirements. Tree removal must occur after October 1st to March 31st, or as specified by the US Fish & Wildlife service (USFWS).

1.19 FENCING

A. Any fences, including hedge and shrubs that need to be removed to facilitate the work shall be replaced in kind or with repairs satisfactory to the Engineer, at the Contractor's expense. Replacement of fences, hedges, and shrubs shall be considered incidental to the contract and not measured for payment.

1.20 SUBMITTALS:

A. All submittals/deliverables are due as scheduled and shall be in accordance with Section 01 33 00. Work will not proceed until all submittals are received and approved. The project manager reserves the right to adjust the due dates of the submittals based on Contractor performance. The Contractor shall label each submittal indicating what is represented, name of Contractor, and project number. All submittals identified as being in error shall be re-performed and corrected at the Contractor's expense.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

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 hours shall take place only between the hours of 7:00 a.m. to 8:00 p.m., excluding Saturdays, Sundays, and legal holidays. Work outside the above time periods will be permitted only with the approval from the City.

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. Pipe and lateral locations shown on the Drawings are based on digitized mapping and CCTV PACP inspections. Contractor shall verify actual field conditions prior to lining and report discrepancies to the Engineer. All rehabilitation shall follow existing alignment using trenchless methods.

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 (or figures). 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.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 29 01

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SUMMARY:

A. Section includes administrative and procedural requirements for unit prices.

1.02 DEFINITIONS:

A. Unit price is a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.03 MEASUREMENT AND PAYMENT – GENERAL:

A. The following subsections describe the measurement of and payment for the work to be done under the items listed in the BID.

B. Each unit or lump sum price stated in the BID shall constitute full compensation as herein specified for each item of work completed in accordance with the drawings and specifications.

C. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

D. Payment Application Times: Submit Application for Payment to Engineer in general compliance with the construction schedule.

E. Application for Payment Forms: Use EJCDC Document C-620 as form for Applications for Payment.

F. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.

G. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.

1. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.

2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

3. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

H. Transmittal: Submit one signed and notarized original copy of each Application for Payment to Engineer by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

I. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Pre-construction surveys and photographs.
4. Health and safety and environmental protection plans.
5. Contractor's construction schedule (preliminary if not final).
6. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
7. Products list (preliminary if not final).
8. Schedule of unit prices.
9. Submittal schedule (preliminary if not final).
10. List of Contractor's staff assignments.
11. List of Contractor's principal consultants.
12. Copies of building permits.
13. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
14. Initial progress report.
15. Report of preconstruction conference.
16. Certificates of insurance and insurance policies.
17. Performance and payment bonds.
18. Data needed to acquire Owner's insurance.

J. Application for Payment at Substantial Completion: After Engineer issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1.04 EXTRA WORK:

A. Extra work, if any, shall be performed in accordance with Article 10 of the General Conditions and will be paid for in accordance with Article 11 of the General Conditions.

1.05 LIMITED ACCESS MANHOLES

A. Any costs associated with establishing access to manholes (both limited access manholes and others), including any permits or fees associated with acquiring access, shall be the responsibility of the Contractor and shall be included in the Contractor's unit rates for sewer inspections.

1.06 CITY'S RIGHT TO SALVAGE:

A. City reserves the right to salvage and keep any items the Contractor demolishes as a part of the work. Disposal for any items not salvaged by the City shall be incidental to Contract and be included in the bid item prices.

1.07 MOBILIZATION:

A. Cost of Mobilization/Demobilization shall be included in the cost of other items of this contract. No additional compensation shall be provided if the Contractor elects to mobilize multiple times for this project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SCHEDULE OF BID ITEMS:

A. Bid Items 1-3: Internal Point Repair By Lining 6", 8", 10"

1. Liner installation will be measured on an "EACH" unit price basis for each liner and paid for at the Contract Unit Price for "Internal Point Repair By Lining". Each unit to be paid for will be the total number of point repair liners 10 LF in length at each diameter specified supplied and installed in accordance with this specification, accepted and measured by the Engineer

2. Where CIPP liners are improperly installed due to negligence on the part of the Contractor, payment for the CIPP liner will be withheld until the identified issues have been rectified.

3. Continuous Temperature Monitoring

a. All work and materials required for the supply, preparation, installation, and operation of continuous temperature monitoring apparatus shall be considered incidental to the CIPP installation and will not be measured for payment. No separate payment shall be made.

4. Styrene Management

a. All work and materials required for the management of styrene will be considered incidental to the CIPP installation and will not be measured for payment. No separate payment shall be made.

5. Infiltration Control and Pre-Liner Installation

a. All work and materials required for the management of infiltration will be considered incidental to the CIPP installation and will not be measured for payment. No separate payment shall be made.

6. Pre-liner preparation shall be included in this bid item and shall include all necessary sewer cleaning, root removal, grease removal, deposit removal, and protruding lateral removal in accordance with Section 33 01 30.14 required to install the liner, including but not limited to removals noted in the "Notes for Construction" of the "Rehabilitation Table" within this contract.

7. This Pay Item includes cost for cleaning of sewers using hydraulic flushing equipment. It shall also include unlimited passes of hydraulic flushing cleaning equipment. This Pay Item includes performing sewer inspections for the type specified in accordance with the Contract Documents and as indicated.

8. Verification of existing sewer lengths, depths, and dimensions will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

9. Sewer service reports and CCTV videos to document condition after pre-liner prep and also after liner installation shall be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

10. The Contractor is responsible for rectifying any damages caused or additional inspection work resulting from incomplete or erroneous Sewer Service Reports.

11. Post liner sewer inspection reports and CCTV videos will be considered incidental to the Work and will not be measured for payment. No separate payment will be made. No payment will be made until post liner CCTV reports and videos are received and reviewed by the Engineer.

B. Bid Items 4-7: Full Segment Repair By Lining 6", 8", 10", 12"

1. Liner installation will be measured on a length basis for each size and paid for at the Contract Unit Price for "Full Segment Repair By Lining". Length to be paid

for will be the total length of CIPP supplied and installed in accordance with this specification, accepted and measured by the Engineer

2. Full segment CIPP measurement will be made horizontally at grade, above the centerline of the pipe from center to center of manholes.

3. All requirements noted in Bid Items 1-3: Internal Point Repair By Lining apply except where superseded in the description for Bid Items 4-7: Full Segment Repair By Lining.

C. Bid Item 8: Connection Cut

1. Reinstatement of sewer services will be measured on a unit basis and paid for at the Contract Unit Price for "Connection Cut". Number of units to be paid for will be the total number of units reinstated in accordance with this specification, accepted and measured by the Engineer.

2. Payment for sewer service reinstatement will occur after confirmation of sewer service reinstatement via review of the Post-Lining CCTV video. Payment will not be made until the Post-Lining inspection videos have been submitted and reviewed.

D. Bid Item 9-10: Lateral and Connection Liner 8" Main 6" Lateral 10' Lateral Length, Lateral and Connection Liner 12" Main 6" Lateral 10' Lateral Length

1. Liner installation will be measured on an "EACH" unit price basis for each liner and paid for at the Contract Unit Price for "Internal Point Repair By Lining". Each unit to be paid for will be the total number of Lateral and connection Liners 18" in mainline length, 10 LF in lateral length at each diameter specified supplied and installed in accordance with this specification, accepted and measured by the Engineer

2. Lateral and Connection Liner measurement will be made via push cam or lateral launch CCTV for the lateral portion, and mainline CCTV for the mainline portion of the liners.

3. All requirements noted in Bid Items 1-3: Internal Point Repair By Lining apply except where superseded in the description for Bid Items 9-10: Lateral and Connection Liner 8" Main 6" Lateral 10' Lateral Length, Lateral and Connection Liner 12" Main 6" Lateral 10' Lateral Length.

4. All pre-liner prep, cleaning, pre-liner CCTV & reporting, and post-liner CCTV & reporting noted in Bid Items 1-3 will apply to both the mainline and to the lateral as part of this bid item. No separate payment will be made outside of this item.

E. Bid Item 11: Lateral Liner 6" Diameter Lateral

1. All requirements of Bid Items 9-10 apply, but this price shall pay for the extension of the lateral and connection liner beyond 10', extending to a cleanout, either existing or installed as a part of this contract.

2. Liner installation will be measured on a length basis for each size and paid for at the Contract Unit Price for "Lateral Liner 6" Diameter Lateral". Length to be paid for will be the total length of CIPP supplied, excluding the first 10 feet of lateral covered by Bid Items 9-10, and installed in accordance with this specification, accepted and measured by the Engineer

F. Bid Item 12: Vacuum Inserted Sewer Clean-Out

1. All requirements of Bid Items 9-10 apply, but this price shall pay for the extension of the lateral and connection liner beyond 10', extending to a cleanout, either existing or installed as a part of this contract.

2. Vacuum Inserted Sewer Clean-Out will be measured on an "EACH" unit price basis for each cleanout and paid for at the Contract Unit Price for "Vacuum Inserted Sewer Clean-Out". Each unit to be paid for will be the total number of Vacuum Inserted Sewer Clean-Outs specified supplied and installed in accordance with this specification, accepted and measured by the Engineer.

3. No separate payment will be made for vacuum excavation, backfill, surface restoration, surface preparation of the lateral, installation, and acceptance testing of the Vacuum Inserted Sewer Cleanout. Expected depths at each Clean-Out installation location is noted in the Rehabilitation Table in the contract. No additional payments or credits will be made for variations in depth of installation. Depth will vary as required for cap to seat on the lateral and be flush with grade. This bid item shall be considered all inclusive to complete the work required.

G. Bid Item 13: Manhole Rehabilitation

1. This pay Item includes rehabilitation of manholes per designated manhole, complete in accordance with the Contract Documents and as indicated

2. Manhole lining will not be measured for payment where no rehabilitation is performed at a designated manhole.

3. General cleaning and preparation work necessary to facilitate installation of the liner shall be considered incidental to "Manhole Rehabilitation" and will not be measured for payment. No separate payment shall be made.

4. Any drilling, Urethane grout injection, oakum rope plugging of drill holes, or other measures required to stop infiltration prior to lining shall be covered under this item.

5. Preparation of quality control records shall be considered incidental to “Manhole Rehabilitation” and will not be measured for payment. No separate payment shall be made.

6. All work and materials required for the preparation and recovery of samples, repair of manholes, supply of test samples, and QA testing as specified shall be considered incidental to “Manhole Rehabilitation” and will not be measured for payment. No separate payment shall be made.

7. Inspections of manholes and associated data deliverables as indicated shall be considered incidental to “Manhole Rehabilitation” and will not be measured for payment. No separate payment shall be made.

8. Flow control of manholes shall be considered incidental to “Manhole Rehabilitation” and will not be measured for payment. No separate payment shall be made.

H. Bid Item 14: 6” Sewer Lateral Repair With Excavation

1. Measurement and payment for Sewer Lateral Repair With Excavation will be measured and paid on a Lineal Foot (LF) unit price basis as identified on the Bid Form. All sewer lateral repairs will be 6 LF minimum in length, with length beyond 6 LF minimized as required to complete the repair of the defect in question. Payment will be for all labor, equipment, and materials required to complete the work and restoration as specified.

2. There are no planned locations for 6” Sewer Lateral Repair With Excavation. All quantity is to be used on a contingency basis if the Contractor determines during Pre-liner preparation for T-liner installation that laterals are in too poor of condition to be lined.

3. Included in this item is all mobilization, saw-cutting, excavation, removal and disposal of pavement, spoils and damaged pipe, bedding, piping, fernco couplings, seeding and mulching, and backfill required to complete a repair. Pavement, sidewalk, and driveway restoration will be paid under other items.

I. Bid Item 15: 6” Sewer Lateral Repair Without Excavation

1. Measurement and payment for Sewer Lateral Repair Without Excavation will be measured and paid on a Lineal Foot (LF) unit price basis as identified on the Bid Form. All sewer lateral repairs will be 6 LF minimum in length, with length beyond 6 LF minimized as required to complete the repair of the defect in question. Payment will be for all labor, equipment, and materials required to complete the work and restoration as specified.

2. There are no planned locations for 6” Sewer Lateral Repair Without Excavation. All quantity is to be used on a contingency basis if the Contractor determines

during Pre-liner preparation for T-liner installation that laterals are in too poor of condition to be lined.

3. Included in this item is all removal and disposal of damaged pipe, bedding, piping, fernco couplings required to complete a repair. This item is to only be utilized if a second lateral exists in a common trench next to the lateral to be removed under Item 14: 6" Sewer Lateral Repair With Excavation. All saw-cutting, excavation, disposal of spoils, and backfill shall be excluded from this item and completed under Item 14 when this item is utilized. Pavement, sidewalk, and driveway restoration will be paid under other items.

J. Bid Item 16: Pavement Replacement Full Depth Concrete

1. Measurement and payment for Pavement Replacement Full Depth Concrete will be measured and paid on a Square Yard (SY) unit price basis as identified on the Bid Form. Payment will be for all labor, equipment, and materials required to complete the work and restoration as specified.

2. There are no planned locations for Pavement Replacement Full Depth Concrete. All quantity is to be used on a contingency basis if the Contractor determines during Pre-liner preparation for T-liner installation that laterals are in too poor of condition to be lined and excavations are required for repairs.

3. This item is to be performed as a pavement restoration after completion of a lateral repair under Bid Item 14: 6" Sewer Lateral Repair With Excavation.

4. Included in this item is the cost of all concrete required to complete the concrete pavement and integral curbing work as well as all incidentals including hook bolts, dowels, reinforcing steel, curing compound, striping (if applicable), hot applied joint sealer, expansion joints (if required), curb underdrain including bedding and cover, formwork, concrete cylinder testing, and restoration.

K. Bid Item 17: Pavement Replacement Asphalt Overlay With Concrete Base

1. Measurement and payment for Pavement Replacement Asphalt Overlay with Concrete Base will be measured and paid on a Square Yard (SY) unit price basis as identified on the Bid Form. Payment will be for all labor, equipment, and materials required to complete the work and restoration as specified.

2. There are no planned locations for Pavement Replacement Asphalt Overlay With Concrete Base. All quantity is to be used on a contingency basis if the Contractor determines during Pre-liner preparation for T-liner installation that laterals are in too poor of condition to be lined and excavations are required for repairs.

3. This item is to be performed as a pavement restoration after completion of a lateral repair under Bid Item 14: 6" Sewer Lateral Repair With Excavation.

4. Included in this item is the cost of all concrete and asphalt required to complete the concrete pavement and integral curbing work as well as all incidentals including tack coat, hook bolts, dowels, reinforcing steel, curing compound, striping (if applicable), hot applied joint sealer, expansion joints (if required), curb underdrain including bedding and cover, formwork, concrete cylinder testing, and restoration.

L. Bid Item 18: Drive Apron Replacement

1. Measurement and payment for Drive Apron Replacement will be measured and paid on a Square Foot (SF) unit price basis as identified on the Bid Form. Payment will be for all labor, equipment, and materials required to complete the work and restoration as specified.

2. There are no planned locations for Drive Apron Replacement. All quantity is to be used on a contingency basis if the Contractor determines during Pre-liner preparation for T-liner installation that laterals are in too poor of condition to be lined and excavations are required for repairs.

3. This item is to be performed as a pavement restoration after completion of a lateral repair under Bid Item 14: 6" Sewer Lateral Repair With Excavation.

4. Included in this item is the cost of all concrete required to complete the concrete drive apron replacement work as well as all incidentals including curing compound, reinforcing steel, expansion joints (where required and at joints with existing concrete), formwork, concrete cylinder testing, and restoration.

M. Bid Item 19: Sidewalk Replacement

1. Measurement and payment for Sidewalk Replacement will be measured and paid on a Square Foot (SF) unit price basis as identified on the Bid Form. Payment will be for all labor, equipment, and materials required to complete the work and restoration as specified.

2. There are no planned locations for Sidewalk Replacement. All quantity is to be used on a contingency basis if the Contractor determines during Pre-liner preparation for T-liner installation that laterals are in too poor of condition to be lined and excavations are required for repairs.

3. This item is to be performed as a pavement restoration after completion of a lateral repair under Bid Item 14: 6" Sewer Lateral Repair With Excavation.

4. Included in this item is the cost of all concrete required to complete the concrete sidewalk replacement work as well as all incidentals including curing compound, reinforcing steel, expansion joints (where required and at joints with existing concrete), formwork, concrete cylinder testing, and restoration.

N. Bid Item 20: External Point Repair of 6"-12" Sewer

1. Measurement and payment for External Point Repair of 6”-12” Sewer will be measured and paid on an “EACH” unit price basis as identified on the Bid Form. Each unit to be paid for will be the total number of External Point Repairs of 6”-12” Sewer 10 LF in length. Payment will be for all labor, equipment, and materials required to complete the work and restoration as specified.

2. There are no planned locations for External Point Repair of 6”-12” Sewer. All quantity is to be used on a contingency basis with approval by the Engineer if the Contractor determines during Pre-liner preparation for Full Segment Repair By Lining installation that sewers are in too poor of condition to be lined.

3. Included in this item is all mobilization, maintenance of traffic, saw-cutting, excavation, removal and disposal of pavement, spoils and damaged pipe, bedding, piping, strongback fernco couplings, seeding and mulching, and backfill required to complete a repair. Pavement, sidewalk, and driveway restoration will be paid under other items.

4. In addition to mainline pipe replacement, this item shall include installation of up to two wye fittings and up to 5 LF of sanitary lateral coming out of each wye fitting connected at the repair location, including reconnection to existing laterals.

5. Where sewer segment repairs are improperly installed due to negligence on the part of the Contractor, payment for the sewer segment repair will be withheld until the identified issues have been rectified.

3.02 INDICENTAL ITEMS

A. Cost of Mobilization/Demobilization shall be included in the cost of other items of this contract. No additional compensation shall be provided if the Contractor elects to mobilize multiple times for this project.

B. Preconstruction video of surface conditions shall be included in the cost of other items of this contract.

C. Maintenance of traffic as outlined Section 01 11 00 will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

D. All other items necessary for the complete performance of all work items in accordance with these specifications shall be included in costs for the various bid items.

E. Sewer flow shall be maintained at all times during work. If bypass pumping is required to maintain the flow, the cost of doing so shall be considered incidental and will not be measured for payment. No separate payment shall be made.

F. Pipeline Access through any manhole modifications or additional excavations shall be considered incidental to other items in the contract and will not be measured for payment. No additional payment will be made.

G. Annulus Grouting

1. Annulus voids due to the Contractor's method of lining, deficiencies in the liner installation, or any other reason related to the Contractor's workmanship or method of operations shall be filled at the Contractor's expense.

2. Repair of defective or incomplete annulus grouting shall be at the Contractors own expense.

H. Sewer Preparation and Repairs Prior to Lining

1. Sewer preparation and repairs prior to lining identified on the drawings and/or visible through the existing inspection data, shall be considered incidental to the pay items identified herein. Additional payment will not be made for internal sewer repairs required to complete the identified rehabilitation works where site conditions and work requirements are consistent with the tendered scope of work.

I. Quality Control Records

1. Preparation of quality control records shall be considered incidental and will not be measured for payment. No separate payment shall be made.

J. Acceptance Testing

1. All work and materials required for acceptance testing of the lining work will not be measured for payment. No separate payment shall be made.

K. Sewer and Manhole Debris Disposal

1. All costs associated with the disposal of sewer and manhole debris and materials as a result of cleaning will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

L. Notices to Residents

1. All costs associated with delivering notices will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

M. Supply of Water

1. Contractor can obtain water from the City at no cost. Contractor shall not obtain water from a hydrant without approval. Coordinate with the City.

N. Clearing and Grubbing

1. All costs associated with clearing and grubbing will be considered incidental to the Work and will not be measured for payment. No separate payment will be made.

END OF SECTION

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SECTION 01 32 17

CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. CONTRACTOR shall provide the Engineer with a detailed work schedule at least fifteen (15) Business Days prior to the commencement of any Work on the Site.

B. Working hours shall take place only between the hours of 7:00 a.m. to 8:00 p.m ., excluding Saturdays, Sundays, and legal holidays. Work outside the above time periods will be permitted only with the approval from the City. However, emergency work may be done without prior permission.

C. Night work may be established by CONTRACTOR as regular procedure with written permission of OWNER. Such permission, however, may be revoked at any time by OWNER if CONTRACTOR fails to maintain adequate equipment and supervision for proper prosecution and control of work at night.

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. Bypass pumping setup and removal milestones.

d. Cleaning and CCTV PACP inspection prior to lining.

e. CIPP liner installation for mainline segments.

f. Short liners and T-liner lateral installations.

g. Manhole rehabilitation activities.

h. Contingency lateral point repairs, if required.

i. Performance testing and quality verification.

j. Subcontractor's items of work.

k. Surface restoration and final cleanup.

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.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 32 33

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide construction photographs pertinent to the Contract work during the Contract period as indicated and in compliance with Contract Documents.

1. Section includes administrative and procedural requirements for the following:

a. Preconstruction photographs.

b. Preconstruction video recordings.

1.02 SUBMITTALS:

A. Submit the following shop drawings in accordance with Section 01 33 00.

B. Qualification Data: For photographer.

C. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph and video recording. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

D. Video Recordings: Submit video recordings within seven days of recording.

1. Submit video recordings on archival grade HDD acceptable to Engineer.

2. Identification: With each submittal, provide the following information:

a. Name of Project and Engineer’s and Owner’s project number.

b. Name and address of photographer.

c. Name of Engineer.

d. Name of Contractor.

e. Date video recording was recorded.

f. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.

g. Weather conditions at time of recording.

1.03 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Photographer Qualifications: An individual who has been regularly engaged as a professional photographer of construction projects for not less than three years.

C. Photographer to use techniques, material and equipment capable of producing photographs of high quality and resolution.

D. Dates for photography at site to be coordinated with Engineer and Engineer to be present during photographic periods at site unless approved otherwise by Engineer.

E. Photographer to make and retain detailed records of all photographs by photographer under this Contract:

1. The records to be in sufficient detail to support any attestation that may be required of photographer.

2. Photographer to retain such records for a period not less than two years from the final acceptance of entire work under this Contract.

1.04 USAGE RIGHTS:

A. Obtain and transfer copyright usage rights from photographer to Owner for unlimited reproduction of photographic documentation.

1.05 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

PART 2 - PRODUCTS

2.01 PHOTOGRAPHIC MEDIA:

A. Digital Video Recordings: Provide high-resolution video files, on archival grade HDD in format acceptable to Engineer.

PART 3 - EXECUTION

3.01 CONSTRUCTION VIDEO RECORDINGS:

A. Video Recording Photographer: Engage a qualified videographer to record construction video recordings.

B. Recording: Mount camera on tripod before starting recording unless otherwise necessary to show area of construction. Display continuous running time and date. At

start of each video recording, record weather conditions from local newspaper or television and the actual temperature reading at Project site.

C. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed, recent events, and planned activities. At each change in location, describe vantage point, location, direction (by compass point), and elevation or story of construction.

1. Confirm date and time at beginning and end of recording.

2. Begin each video recording with name of Project, Contractor's name, videographer's name, and Project location.

D. Transcript: Provide a typewritten transcript of the narration. Display images and running time captured from video recording opposite the corresponding narration segment.

E. Preconstruction Video Recording: Before starting construction, record video recording of Project site and surrounding properties from different vantage points, as directed by Engineer.

1. Flag construction limits before recording construction video recordings.

2. Show existing conditions adjacent to Project site before starting the Work.

3. Show existing buildings either on or adjoining Project site to accurately record physical conditions at the start of construction.

4. Show protection efforts by Contractor.

END OF SECTION

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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 as indicated and in compliance with Contract Documents.

1. Shop Drawings, Product Data, and Samples.

2. Mock Ups.

3. Construction Photographs.

4. Contractor’s Responsibilities.

5. Submission Requirements.

6. Review of Shop Drawings, Product Data, Working Drawings and Samples.

7. Distribution.

8. General Procedures for Submittals.

9. Certificate of Design.

10. Certificates of Compliance.

11. 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 DEFINITIONS:

A. Written and graphic information and physical samples that require Engineer’s responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. File Transfer Protocol (FTP): Communications protocol that enables transfer of files to and from another computer over a network and that serves as the basis for standard

Internet protocols. An FTP site is a portion of a network located outside of network firewalls within which internal and external users are able to access files.

C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

D. 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 fabrication and erection/installation (working) drawings of concrete reinforcement, structural details and piping layout, scheduled information, setting diagrams, actual shopwork manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications as applicable to the work.

1.03 SUBMITTALS:

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Engineer and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor’s construction schedule.

2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.

    a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.

4. Format: Arrange the following information in a tabular format:

    a. Scheduled date for first submittal.

    b. Specification Section number and title.

    c. Submittal category: Action; informational.

    d. Name of subcontractor.

    e. Description of the Work covered.

f. Scheduled date for Engineer's final release or acceptance.

g. Scheduled date of fabrication.

h. Scheduled dates for purchasing.

i. Scheduled dates for installation.

j. Activity or event number.

1.04 SUBMITTAL ADMINISTRATIVE REQUIREMENTS:

A. Engineer's Digital Data Files: Electronic digital data files of the Contract Drawings will not be provided for Contractor's use in preparing submittals.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on accepted submittal schedule.

3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. The Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

5. The Contractor shall revise and resubmit rejected submittals and those requiring corrections or verification of information in a timely manner such that the overall progress of the Work is not impeded.

6. Coordination of Submittal Times: The Contractor shall 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 Sections of the Specifications, so that the installation will not be delayed by processing times, including rejection and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of Contract Time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

C. All shop drawings shall be submitted using the transmittal form furnished by the Engineer.

D. 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.

E. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineers receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 10 working days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Resubmittal Review: Allow 10 working days for review of each resubmittal.

F. Paper Submittals: Place a permanent label or title block on each submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.

3. Number of submittals required:

a. Shop Drawings: Unless otherwise stated in the respective Specifications Sections, submit six (6) copies.

b. Product Data: Unless otherwise stated in the respective Specifications Sections, submit six (6) copies.

c. Samples: Submit the number stated in the respective Specification Sections.

4. Include the following information for processing and recording action taken:

a. Project name.

b. Date.

c. Name of Engineer.

d. Name of Construction Manager.

e. Name of Contractor.

f. Name of subcontractor.

g. Name of supplier.

h. Name of manufacturer.

i. Submittal number or other unique identifier, including revision identifier.

(1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

j. Number and title of appropriate Specification Section.

k. Drawing number and detail references, as appropriate.

l. Location(s) where product is to be installed, as appropriate.

m. Other necessary identification.

5. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

a. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Engineer.

6. Transmittal for Paper Submittals: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return without review submittals received from sources other than Contractor.

a. Transmittal Form for Paper Submittals: Use facsimile of sample form included in these Contract Documents.

b. Transmittal Form for Paper Submittals: Provide locations on form for the following information:

(1) Project name.

(2) Date.

(3) Destination (To:).

(4) Source (From:).

(5) Name and address of Engineer.

(6) Name of Construction Manager.

(7) Name of Contractor.

(8) Name of firm or entity that prepared submittal.

(9) Names of subcontractor, manufacturer, and supplier.

(10) Category and type of submittal.

(11) Submittal purpose and description.

(12) Specification Section number and title.

(13) Specification paragraph number or drawing designation and generic name for each of multiple items.

(14) Drawing number and detail references, as appropriate.

(15) Indication of full or partial submittal.

(16) Transmittal number

(17) Submittal and transmittal distribution record.

(18) Remarks.

(19) Signature of transmitter.

G. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.

2. Name file with submittal number or other unique identifier, including revision identifier.

   a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Engineer.

4. Transmittal Form for Electronic Submittals: Use electronic form acceptable to Owner, containing the following information:

    a. Project name.

    b. Date.

    c. Name and address of Engineer.

    d. Name of Construction Manager.

    e. Name of Contractor.

    f. Name of firm or entity that prepared submittal.

    g. Names of subcontractor, manufacturer, and supplier.

    h. Category and type of submittal.

    i. Submittal purpose and description.

    j. Specification Section number and title.

    k. Specification paragraph number or drawing designation and generic name for each of multiple items.

    l. Drawing number and detail references, as appropriate.

    m. Location(s) where product is to be installed, as appropriate.

    n. Related physical samples submitted directly.

    o. Indication of full or partial submittal.

    p. Transmittal number

    q. Submittal and transmittal distribution record.

    r. Other necessary identification.

    s. Remarks.

5. Metadata: Include the following information as keywords in the electronic submittal file metadata:

    a. Project name.

    b. Number and title of appropriate Specification Section.

c. Manufacturer name.

d. Product name.

H. Options: Identify options requiring selection by Engineer.

I. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

J. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.

2. Note date and content of revision in label or title block and clearly indicate extent of revision.

3. Resubmit submittals until they are marked with acceptance notation from Engineer’s action stamp.

K. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

L. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with acceptance notation from Engineer’s stamp.

PART 2 - PRODUCTS

2.01 SUBMITTAL PROCEDURES:

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Post electronic submittals as PDF electronic files directly to Engineer.

a. Engineer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Submit electronic submittals via email as PDF electronic files.

a. Engineer will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

b. Provide a digital signature with digital certificate on electronically submitted certificates and certifications where indicated.

c. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:

a. Manufacturer's catalog cuts.

b. Manufacturer's product specifications.

c. Standard color charts.

d. Statement of compliance with specified referenced standards.

e. Testing by recognized testing agency.

f. Application of testing agency labels and seals.

g. Notation of coordination requirements.

h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:

a. Wiring diagrams showing factory-installed wiring.

b. Printed performance curves.

c. Operational range diagrams.

d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before or concurrent with Samples.

6. Submit Product Data in the following format:

a. PDF electronic file.

b. Three paper copies of Product Data unless otherwise indicated. Engineer will return two copies.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Certified shop and erection drawings. Contractor shall submit electronic files of the proposed equipment in the capacity, size, and arrangement as indicated and specified. Electronic files shall conform to the following minimum requirements:

a. Electronic Files: AutoCAD latest version, 3D, drawn to scale.

b. Submit electronic files as part of the Shop Drawing submittal.

c. Submit electronic files on CD or DVD.

d. Drawings shall include plan views, sectional views, title block, Tag Numbers, serial numbers, Parts List (identifying each component), dimensions, connection sizes and types and all details of all related items. In cases where certain information is proprietary and is omitted, provided a statement indicating that the information is proprietary and is being omitted.

e. Drawings shall be in conformance with all other requirements as specified in this specification.

2. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

a. Identification of products.

b. Schedules.

c. Compliance with specified standards.

d. Notation of coordination requirements.

e. Notation of dimensions established by field measurement.

f. Relationship and attachment to adjoining construction clearly indicated.

g. Seal and signature of professional engineer if specified.

3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.

4. Submit Shop Drawings in the following format:

a. PDF electronic file.

b. Two opaque (bond) copies of each submittal. Engineer will return one copy(ies).

c. Three opaque copies of each submittal. Engineer will retain two copies; remainder will be returned.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.

b. Product name and name of manufacturer.

c. Sample source.

d. Number and title of applicable Specification Section.

e. Specification paragraph number and generic name of each item.

3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.

4. Disposition: Maintain sets of accepted Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

E. Coordination Drawing Submittals: Comply with requirements specified in Division 01.

F. Contractor's Construction Schedule: Provide a written schedule with listing all major activities dates including start and completion.

G. Application for Payment and Schedule of Values: Comply with requirements specified in Division 01 Section "Measurement & Payment"

H. Test and Inspection Reports and Schedule of Tests and Inspections Submittals: Comply with requirements specified in Division 01.

I. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified in Division 01 Section "Contract Closeout."

J. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of Engineer and owners, and other information specified.

K. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

L. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

M. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

N. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

O. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

P. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

Q. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

R. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

S. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests

performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

T. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

U. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

PART 3 - EXECUTION

3.01 CONTRACTOR'S REVIEW:

A. Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents prior to submission to the Engineer. Mark with approval stamp before submitting to Engineer.

B. Contractor review shall verify the following:

1. Field measurements

2. Field construction criteria

3. Catalog numbers and similar data

4. Conformance with the Specifications

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 for any such errors and omissions.

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 by the Engineer. Any fabrication performed, materials purchased or on-site construction accomplished which does not conform to accepted shop drawings and data shall be at the Contractor's own risk. The Owner will not be liable for any

expense or delay due to corrections or remedies required to accomplish conformity with the requirements of the Contract.

F. Project Closeout and Maintenance Material Submittals: See requirements in Division 01 Section "Closeout Procedures."

G. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ENGINEER'S ACTION:

A. The Engineer's review is for general conformance with the design concept and contract documents. 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. Submittals will be reviewed for the Contractor's approval stamp. Submittals not stamped by the Contractor will be returned without any action.

C. 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 or omissions, including details, dimensions, and materials;

3. as approving departures from details furnished by the Engineer except as otherwise provided herein.

D. 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.

E. Two (maximum) copies of shop drawings or product data will be returned to the Contractor. Samples will not be returned.

F. Submittals will be returned to the Contractor under one of the action codes indicated below and defined on the transmittal form furnished by the Engineer.

1. Marking: No Exception Taken.

a. When submittals are marked as "No Exception Taken," Work covered by submittal may proceed provided it complies with Contract Documents. Acceptance of Work depends on that compliance.

2. Marking: Make Corrections Noted.

   a. When submittals are marked as "Make Corrections Noted," Work covered by submittal may proceed provided it complies with Engineer's notations or corrections on submittal and with Contract Documents. Acceptance of Work depends on that compliance. Resubmittal not required.

3. Marking: Amend and Resubmit.

   a. When submittals are marked as "Amend and Resubmit," do not proceed with Work covered by submittal. Do not permit Work covered by submittals to be used at Project site or elsewhere where Work is in progress.

   b. Revise submittal or prepare new submittal in accordance with Engineer's notations in accordance with resubmittal requirements of this section. Resubmit without delay. Repeat if required to obtain different action marking.

4. Marking: Rejected; See Remarks.

   a. When submittals are marked as "Rejected; See Remarks," do not proceed with Work covered by submittal. Work covered by submittal does not comply with Contract Documents.

   b. Prepare new submittal for different material or equipment supplier or different product line or material of same supplier complying with Contract Documents.

5. Marking: For Information Only.

   a. When submittals are marked as "For Information Only," the Engineer will review the submittal but take no action.

   b. It will be recorded as "For Information Only". Work covered by this submittal may proceed provided it complies with the Contract Documents.

6. Marking: Not Required for Review.

   a. When submittals are marked as "Not Required for Review," the Engineer has not reviewed the submittal and it is being returned.

   b. Work covered by this submittal may proceed provided it complies with the Contract Documents.

G. 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 in relation to revisions which are not specifically pointed out to the Engineer which are deemed, by the Engineer, not to be in accordance with the Contract Documents .

H. 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.

I. 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. The shop drawing and the Product data sheet reviews do not authorize changes in Contract Price or Contract Time. Changes involving Contract Price or Contract Time are authorized only by a signed Change Order, in accordance with the General Conditions.

J. 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.

K. Material and equipment delivered to the Site will not be paid for until the pertinent shop drawings have been reviewed and accepted by the Engineer.

3.03 DISTRIBUTION:

A. Distribute reproductions of accepted shop drawings and copies of accepted 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.

3.04 CERTIFICATE OF DESIGN:

A. If specifically specified in other Sections of these Specifications, the Contractor shall submit the applicable Certificate of Design for each item required, Form 01 33 00 1, completely filled in and signed and sealed by a registered professional engineer.

3.05 CERTIFICATES OF COMPLIANCE:

A. Certificates of Compliance as specified 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 specified in the technical specifications. Certificates are required for demonstrating proof of compliance with specification requirements and shall be executed in six (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.

3.06 SCHEDULES:

A. Provide all schedules specified in Articles 2.05 B, 2.07, 14.01 and elsewhere in the General Conditions.

B. Article 14.02 of the General Conditions, Progress Payments, shall be subject to meeting the Schedule Requirements of Section 01 33 00 Table 01 33 00-1. No progress payment identified in Section 01 33 00 Table 01 33 00-1 over the limits identified will be made until the milestones set in this table are satisfied.

Table 01 33 00-1

Section Number	Submittal	Schedule Requirement/ Payment Milestone
	Project schedule is submitted and reaches no exceptions taken status.	Prior to 5% payment
01 33 00	Shop drawings are submitted and reaches no exceptions taken status.	Prior to 25% payment.
01 77 00	Record documentation is submitted and reaches no exceptions taken status.	Prior to 95% payment.
01 77 00	Punch list is completed and corrected.	Prior to 95% payment.

END OF SECTION

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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

C. Ohio Department of Transportation (ODOT) Construction and Material Specifications:

1. CMS 208: Erosion and Sediment Control

D. Ohio Environmental Protection Agency (Ohio EPA):

1. Construction General Permit (CGP) for Stormwater Discharges Associated with Construction Activity.

E. No separate Stormwater Pollution Prevention Plan (SWPPP) will be provided by the Owner. The Contractor shall implement erosion and sediment control measures in accordance with ODOT CMS 208 and Ohio EPA CGP requirements as applicable to the Work. The Contractor is responsible for preparing and maintaining any temporary controls necessary to comply with these standards.

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 of 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

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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 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 specification's sections, the Contractor shall arrange for and provide technical representation from manufacturers 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 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. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from the Engineer.

C. Coordinate delivery with installation to ensure minimum holding time for items that are hazardous, flammable, easily damaged or sensitive to deterioration.

D. 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.

E. Pack spare parts in containers bearing labels clearly designating contents and pieces of equipment for which intended. All spare parts shall be cross-referenced to their applicable Specification Section.

F. 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.

G. Provide equipment and personnel to unload all items delivered to the site.

H. 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.

I. Deliver spare parts at same time as pertaining equipment. Deliver spare parts to owner after completion of work.

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. Storage instruction shall be studied by the Contractor and reviewed with the Engineer by him. Instructions shall be carefully followed and a written record of this kept by the Contractor for each product and pieces 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.

C. All mechanical and electrical equipment and instruments shall be covered with canvas and stored in a weathertight building to prevent injury. The building may be a temporary structure on the site or elsewhere, but it shall be satisfactory to the Engineer. Building shall be provided with adequate ventilation to prevent condensation. Maintain temperature and humidity within range required by manufacturer and to prevent condensation on the equipment being stored.

1. All equipment shall be stored fully lubricated with oil, grease and other lubricants unless otherwise instructed by the manufacturer.

2. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding".

3. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. New lubricants shall be put into the equipment at the time of acceptance.

4. Prior to acceptance of the equipment, the Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guaranty the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at the Contractor's expense.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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.

e. Remove snow and ice to provide safe access to building.

f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

h. Sweep concrete floors broom clean in unoccupied spaces.

i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

j. Remove labels that are not permanent.

k. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

l. Leave Project clean and ready for occupancy.

C. Prior to substantial completion or Owner occupancy, Contractor with Engineer and Owner, shall conduct inspection of sight-exposed interior and exterior surfaces and work areas to verify Work and site is clean.

END OF SECTION

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SECTION 01 77 00

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY:

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following as indicated and in compliance with Contract Documents:

1. Substantial Completion procedures.

2. Final completion procedures.

3. Warranties.

4. Final cleaning.

5. Repair of the Work.

6. Specific closeout and special cleaning requirements for the Work in those Sections.

1.03 SUBMITTALS:

A. Submit the following shop drawings in accordance with Section 01 33 00.

B. Product Data: For cleaning agents.

C. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

D. Certified List of Incomplete Items: Final submittal at Final Completion.

E. Certificates of Release: From authorities having jurisdiction.

F. Certificate of Insurance: For continuing coverage.

1.04 SUBSTANTIAL COMPLETION PROCEDURES:

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of ten days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.

2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.

3. Submit closeout submittals specified in individual Divisions 02 through 33 Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.

C. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of ten days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for final completion.

1.05 PROJECT RECORDS DOCUMENTS

A. The Contractor shall record any actual revisions to the Work and maintain one set of the following Project Record Documents on Site:

1. Contract Drawings, Specifications, and Addenda.

2. Change Orders, Field Orders, and other written notices.

3. Shop drawings, Product data, and samples.

4. Records of surveying and layout Work.

5. Project Record Drawings.

B. The Contractor shall record information on the Project Record Documents concurrent with construction progress and store these documents separately from the documents used for construction.

1. The Owner will supply a set of Contract Drawings. The Contractor shall mark thereon all revisions as the Work progresses in order to produce a set of as-built drawings.

2. The Contractor shall note any changes made during construction by any of the Contractor's forces or those of any Subcontractors.

3. The Contractor shall dimension the locations of buried or concealed Work, especially piping and conduit, with reference to exposed structures.

4. The Contractor shall dimension the installed locations of concealed service lines on the Site or within the structure by reference from the center line of the service to the structure column lines, or other main finished faces, or other structural points which are easily identified and located in the finished Work.

5. Certificates of Substantial Performance and Total Performance shall not be issued until as-built drawings are complete and submitted, and the Contractor has satisfied all requirements for Substantial Performance and Total Performance of the Work.

C. For Project Record Documents and Record Shop Drawings, the Contractor shall legibly mark each item to record actual construction including:

1. Field changes of dimensions and details.

2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

3. Measured locations of internal utilities and appurtenances which are concealed in construction, referenced to visible and accessible features of the Work.

4. Changes in the Work caused by Site conditions, or originated by the Owner, the Engineer, the Contractor, Preselected Equipment Vendors, or Subcontractors and by addenda, supplemental drawings, Site instructions, supplementary instructions, change orders, correspondence, and directions of any regulatory authorities.

5. Record the location of concealed mechanical services and electrical main feeders, junction boxes and pullboxes.

D. Upon completion of the Work, the Contractor shall prepare two CD-ROM sets of the Record Shop Drawings and an index.

E. The Record Shop Drawings CD-ROM index shall identify the Owner's project number, project name, and Contract number and the contents of each CD in the following format:

1. The index shall include the following columns of information for each Record Shop Drawing:

a. CD number.

b. Specification Section number.

c. Specification title.

d. Shop drawing transmittal number.

e. Shop drawing equipment description including Preselected Equipment Vendor and Supplier.

2. The index shall be printed by the following two sorts:

a. Primary sort: Specification Section number. Secondary sort: shop drawing transmittal number.

b. Primary sort: CD number. Secondary sort: Specification Section number.

3. The index shall be generated using Microsoft Excel software. A copy of the electronic file shall be furnished to the Owner.

4. The Contractor shall remove the Architect/Engineer seal from all documents.

5. The Contractor shall provide a set of Project Record Documents on CD-ROM in an electronic format compatible with the plant CD-ROM record standards. All drawings are to be provided electronically on CD-ROM in both AutoCAD (latest version) and Adobe Acrobat PDF (latest version). Also provide a set of CD-ROMs containing the software implemented on this project, including standard software and custom application software. Also provide a set of CD-ROMs containing the various programming tools and files necessary for maintenance, editing, backing up and restoring programmable equipment implemented on this project.

1.06 EQUIPMENT INVENTORY SPREADSHEET

A. As part of the Owner's asset management program, the Contractor shall complete all fields for the equipment inventory file for each piece of equipment and device provided under this Contract, as a requirement for Substantial Performance. An electronic format of the equipment inventory spreadsheet will be provided on a CD to the successful General Contractor.

1.07 EQUIPMENT PREVENTATIVE MAINTENANCE SPREADSHEET

A. As part of the Owner's asset management program, the Contractor shall complete all fields for each piece of equipment and device provided under this Contract, as a requirement for Substantial Completion. The Contractor shall transfer all of the manufacturer's recommended preventative maintenance tasks and frequencies into the spreadsheet. An electronic format of the equipment inventory spreadsheet will be provided on a CD to the successful General Contractor

1.08 PROTECTING INSTALLED CONSTRUCTION:

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.09 FINAL COMPLETION PROCEDURES:

A. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."

2. Certified List of Incomplete Items: Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate

for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.10 LIST OF INCOMPLETE ITEMS (PUNCH LIST):

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize items applying to each space by major element

2. Include the following information at the top of each page:

a. Project name.

b. Date.

c. Name of Engineer

d. Name of Contractor.

e. Page number.

3. Submit list of incomplete items in the following format:

a. MS Excel electronic file. Engineer will return annotated file.

b. PDF electronic file. Engineer will return annotated file.

c. Three paper copies. Engineer will return one copy.

1.11 SUBMITTAL OF PROJECT WARRANTIES:

A. Time of Submittal: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Partial Occupancy: Submit properly executed warranties within [15] days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of Contract Documents.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8 1/2-by-11-inch paper.

2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark 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 Installer.

3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

4. File: Scan warranties and bonds and assemble complete warranty and bond submittal package into a single indexed electronic PDF file with links enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 FINAL CLEANING:

A. General: Perform final cleaning to restore site to pre-construction conditions.

3.02 REPAIR OF THE WORK:

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

END OF SECTION

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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

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SECTION 31 23 00

EXCAVATION AND FILL

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide excavation and fill as indicated and in compliance with Contract Documents.

B. Section includes:

1. Excavation and fill for: Sewer utilities, and pavement; site drainage, structures, and features.

2. Embankments.

3. Controlled fill using materials from imported and on-site sources.

4. Soil and aggregate materials.

5. Compaction and testing.

1.02 REFERENCES:

A. American Association of State and Highway Transportation Officials (AASHTO):

1. M147: Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses.

B. ASTM International (ASTM):

1. C33: Specification for Concrete Aggregates.

2. C136: Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

3. D421: Practice for Dry Preparation of Soil Samples for Particle Size Analysis and Determination of Soil Constants.

4. D422: Test Method for Particle-Size Analysis of Soils.

5. D698: Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3)).

6. D1556: Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.

7. D1557: Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lb/ft3 (600 kN-m/m3)).

8. D2167: Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

9. D2487: Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

10. D2940/D2940M: Standard Specification for Graded Aggregate Material For Bases or Subbases for Highways or Airports.

11. D4318: Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

12. D5195: Standard Test Method for Density of Soil and Rock In-Place at Depths Below Surface by Nuclear Methods

13. D6938: Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

F. Occupational Safety and Health Administration (OSHA) Standards and Regulations:

1. 29 CFR 1926, Subpart P: Safety and Health Regulations for Construction, Excavations.

1.03 PRICE AND PAYMENT PROCEDURES:

A. Measurement and Payment: Section 01 29 01.

B. Unit Prices: Section 01 29 01.

C. Alternates: Section 01 29 01.

1.04 CLASSIFICATION OF EXCAVATION:

A. Excavation is incidental to the lineal foot unit price for Bid Item 14: 6” Sewer Lateral Repair With Excavation contract price for the entire project.

1.05 DEFINITIONS

A. Percent Compaction or Compaction Density: The field dry density of compacted material, expressed as a percentage of the maximum dry density.

B. Field Dry Density or Field Density: In-place density as determined by ASTM D1556 (Sand Cone Method), ASTM D2167 (Rubber Balloon Method), or ASTM D6938 (Nuclear Method).

C. Maximum Dry Density: Laboratory density as determined by ASTM D698 (Standard Proctor) or ASTM D1557 (Modified Proctor) and occurring at the optimum moisture content of the material being tested.

1.06 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1. Temporary excavation and shoring drawings for worker protection in accordance with the General Conditions.

2. Gradation analysis.

3. Materials Sources: Name of source, location, date of sample, sieve analysis, and laboratory compaction characteristics.

4. Test and Evaluation Reports:

a. Field density testing reports: Provide results from field density testing of prepared subgrade and compacted fill.

b. Grain-size analysis.

c. Laboratory compaction characteristics of soils.

d. Water content.

1.07 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Testing will be provided by the Owner as specified. Contractor shall be responsible for cost of testing and inspection conducted as a result of non-conforming work.

C. Protect excavations by shoring, bracing, sheet piling, underpinning or other methods required to prevent cave-in of loose soil. Protection shall be in accordance with OSHA 29 CFR 1926, Subpart P.

1.08 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

B. Geotextile Fabric:

1. Provide rolls wrapped with protective covering to protect from mud, dirt, dust, and debris. Label each roll with number or symbol to identify production run.

2. Protect from sunlight during transportation and storage. Do not leave exposed to sunlight for more than two weeks during installation operations.

1.09 TRENCH EXCAVATION REQUIREMENTS

A. Trench excavation shall conform to OSHA 29 CFR Subpart P – Excavations, in its entirety.

B. Protective systems for trench excavation shall include sloping, benching, shielding, and support systems as required by soil conditions and depth. Systems shall be designed by a Professional Engineer licensed in the State of Ohio for trenches deeper than 20 feet, except for premanufactured trench shields used per manufacturer's specifications.

C. Submit trench protective system drawings, computations, and supporting information demonstrating compliance with OSHA and project requirements.

PART 2 - PRODUCTS

2.01 FILL MATERIALS:

A. Suitable Material: Material from on-site excavation or permitted off-site sources that meets all of the specified requirements for its intended use and is not unsuitable. Wet subgrade material which meets other requirements for suitable material is suitable.

B. Unsuitable Material: Material that fails to meet requirements for suitable materials; or contains any of the following:

1. Organic clay, organic silt, or peat; as defined in ASTM D2487.

2. Vegetation, wood, roots, leaves, and organic, degradable material.

3. Stones or rock fragments over 6 inches (15 cm) in any dimension.

4. Porous biodegradable matter, excavated pavement, construction debris, rubbish, or refuse.

5. Ice, snow, frost, or frozen soil particles.

C. General Fill: Suitable, unclassified material.

D. Structural Fill: Suitable material that is classified by the Unified Soil Classification System (USCS) in accordance with ASTM D2487 as GW, GP, GM, GC, SW, SP, SM, SC, CL, ML, CH, MH. Verify that the largest particles in the fill are no greater in dimension than one-half the thickness of the compacted lift thickness.

E. Embankment Fill: Structural Fill; Classified in accordance with ASTM D2487 classification as CL.

F. Granular Fill:

1. Densely Graded: ODOT Item 304.

2. Open Graded: ASTM C33, coarse aggregate, No. 57.

G. Sand: Natural sand. Fine aggregate resulting from natural or manufactured processes within the gradation limits of ODOT Item 703.02.

2.02 EQUIPMENT:

A. Compaction equipment shall be capable of consistently achieving the specified compaction requirements.

2.03 PIPE BEDDING AND COVER MATERIAL

A. Pipe bedding material shall provide full and continuous support for the pipe and conform to ASTM C33 and ODOT Item 703.11.

B. Bedding for pipes larger than 18 inches shall be crushed rock conforming to ASTM C33 Size No. 57; smaller pipes may use crushed gravel or sand bedding.

C. Pipe cover material shall match bedding requirements and extend to the top of the pipe zone as shown on the Drawings.

2.04 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.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Verify that dewatering support systems are in place before commencing with excavation.

B. Verify that excavation safety and support systems meeting the requirements of OSHA 29 CFR 1926, Subpart P are in place before commencing with excavation.

1. Minimum slopes for laying back excavations or materials are contained in OSHA 29 CFR 1926, Subpart P; Appendices A and B.

2. Minimum requirements for shoring and bracing are contained in OSHA 29 CFR 1926, Subpart P; Appendix C.

C. Verify that fill materials submittals have been accepted by Engineer before commencing with work requiring the use of these materials.

D. Verify that erosion and sediment control measures are in place and functioning properly.

E. Immediately notify the Engineer if unexpected subsurface facilities or suspected hazardous materials are encountered during excavation. Discontinue affected work in area until notified to resume work.

F. Test Pits:

1. Comply with the requirements in Section 01 14 14.

2. Excavate test pits to field verify the locations of existing underground utilities at crossings and at tie-in points before ordering materials or commencing excavation. Immediately notify the Engineer if conflicts are encountered.

3.02 PREPARATION:

A. Underpin adjacent structures that could be damaged by excavation work.

B. Cut pavement with saw or pneumatic tools to prevent damage to remaining pavement. Dispose of large pieces of demolished pavement before proceeding with excavation.

C. Remove subsurface structures and related obstructions as indicated.

D. Remove boulders within excavation limits.

3.03 PROTECTION OF IN-PLACE CONDITIONS:

A. Comply with the requirements specified in Section 01 14 14.

B. Support and protect from damage – existing pipes, poles, wires, fences, curbs, property line markers, and other features or structures which must be preserved in place to avoid being temporarily or permanently relocated.

C. Excavation Near Existing Structures:

1. Discontinue digging by machinery when excavation approaches pipes, conduits, or other underground structures. Continue excavation by use of hand tools. Include such manual excavation in work to be done when incidental to normal excavation and under items involving normal excavation.

2. Excavate test pits near, or at intersection with, existing utilities or underground structures to determine the exact location of existing features.

D. Excavation Near Private Property:

1. Record existing condition of features on adjacent property by means of dated photographs or cameras. Provide construction photographs according to Section 01 32 33.

2. Enclose uncut tree trunks adjacent to work in wooden boxes of such height necessary to protect tree from injury due to piled material, equipment, or operations. Operate excavating machinery and cranes so as to prevent injury to overhanging branches and limbs.

3. Protect cultivated hedges, shrubs, and plants which would otherwise be damaged by the work.

4. Where protection of vegetation is not possible, dig up, temporarily transplant, and maintain. After active construction operations in the area have ceased, transplant vegetation to the original positions and provide water and nursery care until growth is re-established.

5. Do not use or operate tractors, bulldozers, or other power-operated equipment on paved surfaces. Provide protection on pavement or tracks if construction traffic is unavoidable.

3.04 RESTORATION:

A. Restore private property and structures promptly. Begin restoration work within 24 hours of when damage occurred.

B. Existing surfaces, features, or utilities that are to remain but are damaged during construction shall be repaired or replaced to at least the condition in which they were found immediately before work began, unless noted otherwise.

C. Damaged Trees To Remain: Cut all damaged branches, limbs, and roots smoothly and neatly without splitting or crushing. Neatly trim, cut the injured portions and cover with

an application of grafting wax or tree healing paint. Replace damaged trees which subsequently die or continue to show lack of growth due to damage, 1 year after substantial completion.

D. Cultivated Vegetation: Includes, but is not limited to: hedges, shrubs, and plants. Vegetation that is damaged shall be replaced with equal kind and of at least the quality before work began.

3.05 EXCAVATION:

A. Excavate to accommodate new structures and construction operations.

B. Excavate to lines and grades necessary to provide finish grades.

C. Excavations that are not shored and deeper than 4 feet (1.2 m) shall have banks laid back to a minimum stable slope matching the angle of repose of the excavated material.

D. Workers shall have an adequate means of exit from excavations that are 4 feet (1.2 m) or greater in depth. The means of exit shall not require more than 25 feet (7.5 m) of lateral travel.

E. Establish limits of excavation to allow adequate working space for installing forms and for safety of personnel.

F. Carry out program of excavation, dewatering, and excavation support systems to eliminate possibility of undermining or disturbing foundations of existing structures or the work.

G. Provide excavation protective systems in compliance with OSHA 29 CFR 1926 Subpart P – Excavations. Acceptable systems include sheeting, shoring, bracing, or shielding (such as trench boxes) as required by soil conditions and depth. Protective systems shall be installed and maintained per OSHA standards and inspected daily by a competent person.

H. Preserve material below and beyond the lines of excavations.

I. Locate stockpiled excavated material at least 3 feet (90 cm) from edge of excavations to prevent cave-ins or bank slides.

J. Excavate for depressed mat foundations so that adjacent sections of foundation mat will rest on undisturbed ground.

3.06 TRENCH WIDTH AND OPEN TRENCH LENGTH

A. Trench width shall be no greater than necessary to allow safe placement and compaction of bedding and backfill.

B. Limit open trench length to 50 feet during work periods. At the end of each day, no more than one pipe length of open trench shall remain.

3.07 CONTROL OF WATER IN TRENCHES

A. Standing water in trenches is prohibited. Maintain water table below trench bottom to ensure a firm working surface.

B. Provide dams or cutoffs to prevent water transport along trench bottom.

3.08 SUBGRADE PREPARATION:

A. The exposed surface shall be examined by an engineering geologist or soils engineer to determine that the proper bearing material has been exposed.

B. Materials which are determined to be unsuitable by visual inspection shall be over-excavated below the foundation subgrade and backfilled with ODOT 304 Aggregate Base.

C. Backfill with compacted open-graded granular fill wrapped with nonwoven geotextile fabric. In no case shall the aggregate be placed directly on the exposed subgrade prior to placing the geotextile fabric.

D. Compact subgrade and proof roll to identify soft spots or other deficiencies prior to filling operations or placing foundations. Correct deficiencies as specified for AUTHORIZED OVER-EXCAVATION and repeat proof roll procedure until successful.

E. When subgrade is below controlled fill, scarify subgrade to bond with subsequent material lifts.

3.09 PIPE BEDDING AND COVER PLACEMENT

A. Place bedding in uniform lifts not exceeding 8 inches. Compact each lift using vibratory or tamping equipment to maintain pipe grade.

B. Completely fill under pipe haunches using shovel slicing or spud bars.

C. After laying pipe, place cover material in lifts not exceeding 12 inches and compact uniformly on both sides of pipe.

3.10 UNAUTHORIZED EXCAVATION:

A. Contractor is responsible for backfilling unauthorized excavations with structural fill.

3.11 PIPE LAYING AND JOINTING

A. Lower pipe carefully into trench using approved lifting devices. Do not drop pipe.

B. Clean joint surfaces and gaskets before assembly. Assemble joints per manufacturer's recommendations using mechanical means.

C. Do not exceed manufacturer's deflection limits.

3.12 FILL:

A. Fill to lines and grades necessary to provide finish grades.

B. Use a placement method that does not disturb or damage other work or existing features.

C. Maintain fill materials within 3 percent of optimum moisture, to attain required compaction density.

D. Place and compact material in equal continuous layers.

E. General fill may be used in open areas, over lot fill, and areas which are not load bearing.

F. Use structural fill beneath and adjacent to buildings and structures, and beneath pavements.

G. Use concrete fill where footing bearing surfaces are over-excavated or footing is otherwise not bearing on undisturbed soil.

H. Maximum compacted depth is 6 inches for aggregate materials and 8 inches for soil materials, unless noted otherwise.

I. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking, or other damage.]

3.13 BACKFILL ABOVE PIPE ZONE

A. Place granular backfill in lifts not exceeding 8 inches and compact to 98% of maximum dry density per ASTM D698.

B. Place earth backfill in lifts not exceeding 12 inches and compact to 90% of maximum dry density at moisture content within ±2% of optimum.

3.14 COMPACTION:

A. Compact to density specified and indicated for various types of material. Control moisture content of material being placed as specified, or if not specified - at a level slightly lower than optimum.

B. Compaction Density: Provide densities in Table 31 23 00-3. The values listed are minimum percentages, unless noted otherwise.

Table 31 23 00-3	
Area	Percentage of Maximum Dry Density as defined by ASTM D1557 (Modified Proctor) [ASTM D698 (Standard Proctor)]
Scarified subgrades	90 [95]
Under pavement, slabs	95 [98]
Under structures or within 25 feet (7.5 m) of structures	95 [98]
Stormwater Management (SWM) basin embankment	98 [100]
Under exterior concrete slab and sidewalks	90 [95]
Open or grassed areas	85 [90]
Topsoil	85 [90] (maximum)

3.15 BACKFILLING AGAINST STRUCTURES:

A. Backfill shall not be placed against foundation walls until all interior floors have been placed and the concrete has attained design strength. This includes the floor level at grade or the next level above grade if no floor is within 2 feet (0.6 m) of finished grade.

B. Backfill shall not be placed against cantilever walls until the concrete has attained design strength.

3.16 BACKFILL AROUND MANHOLES AND STRUCTURES

A. Backfill only after concrete has attained at least two-thirds of specified compressive strength.

B. Raise backfill uniformly to prevent unbalanced loading. Use hand tampers adjacent to structures.

3.17 EMBANKMENT FILL AND COMPACTION:

A. Begin filling in lowest section of work area. Grade surface of fill approximately horizontal but provide with sufficient longitudinal and transverse slope to allow for runoff of surface water from every point.

B. Install temporary dewatering sumps in low areas during filling operation where excessive amounts of rain runoff collect.

C. Reduce moisture content of fill material, if necessary, in source area by aerating it over during warm and dry atmospheric conditions. A large disc harrow with two to three foot diameter disks may be required for working soil in a drying operation.

D. Compact uniformly throughout. Keep fill surfaces sufficiently smooth and free from humps and hollows to allow for proper and uniform compaction. Do not permit hauling equipment to follow a single track on the same layer but direct equipment to spread out to prevent over compaction in localized areas. Take care in obtaining thorough compaction at edges of fill.

E. Slightly slope surface of fill to ensure drainage during periods of wet weather. Do not place fill while rain is falling or after a rain-storm until the Engineer considers conditions satisfactory. During such periods and upon suspension of filling operations for periods in excess of 12 hours, roll smooth the surface of fill using a smooth wheel static roller to prevent excessive absorption of rainfall and surface moisture. Prior to resuming compaction operations, remove muddy material off surface to expose firm, compacted material, as determined by the Engineer.

F. When fill is placed against an earlier fill or against in-situ material under and around structures, including around piping beneath structures or embankments, slope junction between two sections of fill at 1.5 to 1 (horizontal to vertical). Bench edge of existing fill 24 inches (60 cm) to form a serrated edge of compact stable material against which to place the new fill. Ensure that rolling extends over junction between fills.

G. Clean debris, remove loose material, and proof roll previously placed fill which has had time to become desiccated or littered with debris.

H. After spreading each loose lift to the required thickness and adjusting its moisture content, roll with sufficient number of passes to obtain the required compaction. One pass is defined as the required number of successive trips which by means of sufficient overlap will insure complete coverage and uniform compaction of an entire lift. Do not make additional passes until previous pass has been completed.

I. Fill surface shall be firm and hard when rolled. Reduce moisture content when fill material sinks and weaves under rollers and equipment. Spread out rolling operations over the maximum practicable area to minimize condition of sinking and weaving. Suspend fill operations on portions of embankment where inundations produce surface cracks.

J. Remove material which fails testing requirements and replace work.

3.18 FIELD QUALITY CONTROL:

A. See Section 01 43 00 for general requirements for field inspection and testing.

B. Perform inspection at least once daily to confirm lift thickness and compaction effort for entire fill area.

C. Perform particle size distribution and gradation analyses using ASTM D422 and following standard practices in ASTM D421. Perform 1 test for every source and submit results to Engineer for acceptance. Repeat the moisture density test for every 5,000 cubic yard (3,825 cubic metre) of material used.

D. Perform field density testing in accordance with ASTM D1556, ASTM D2167, or ASTM D6938.

E. Evaluate field density test results in relation to maximum dry density as determined by testing material in accordance with ASTM D698 (Standard Proctor).

F. Perform tests in accordance with ASTM D4318 to determine Liquid Limit, Plastic Limit and Plasticity Index and submit test results to Engineer for acceptance. Minimum of one test per 5,000 cubic yard (3,825 cubic metre) of soil for use as fill material and whenever classification of material is in doubt as determined by the Engineer.

G. Location of field density tests shall be mutually acceptable to testing laboratory and the Engineer as recommended by the Engineer.

H. In the event compacted material does not meet specified in-place density, re-compact material and re-test area until specified results are obtained.

I. Frequency of field density tests:

Table 31 23 00-4

Area	Frequency
Sewer Point Repairs in Roadway	1 per lift for each point repair (20 linear feet or less)
Roadways	1 per lift for each 250 linear feet (100 linear metre) of fill placed
Paved Areas	1 per lift for each 10,000 square feet (1000 square metres) of fill placed
Open Areas	1 per lift for each 25,000 square feet (2300 square metres) of fill placed
Isolated Footing Perimeter	1 per alternate lift for each 25 linear feet (7.5 linear mitres)
Footing and Wall Backfill	1 per alternate lift for each 50 linear feet (15 linear metres) (both sides of wall)
Embankment Fills	1 per lift for each 5,000 square feet (500 square metres) of fill placed
Regardless of the minimum testing frequency specified, field density tests shall be performed by the Contractor in sufficient number for the Contractor's quality control purposes to ensure that specified density is obtained.	

Table 31 23 00-5	
Area	Frequency
Sewer Point Repairs in Roadway	1 per lift for each point repair (20 linear feet or less)
Roadways	1 per lift for every 200 linear feet (50 linear metres) of roadway
Paved Areas	1 per lift for every 3,500 square feet (300 square metres) of pavement
Open Areas	1 per lift for each 25,000 square feet (2000 square metres) of open area
Isolated Footing Perimeter	1 per alternate lift for each 25 linear feet (7.5 linear metres)
Footing and Wall Backfill	1 per alternate lift for each 50 linear feet (15 linear metres) (both sides of wall)
Under Structures	1 per lift for every 1,000 square feet (100 square metres) of structure
Around Structures	1 per lift for every 1,500 square feet (150 square metres) of structure
Embankment Fills	1 per lift for every 10,000 square feet (1000 square metres) of embankment
Regardless of the minimum testing frequency specified, field density tests shall be performed by the Contractor in sufficient number for the Contractor's quality control purposes to ensure that specified density is obtained.	

3.19 DENSITY TESTING FOR TRENCH BACKFILL

A. Perform in-place density and moisture testing per ASTM D5195 or equivalent.

B. Minimum compaction:

1. Granular backfill: 98% of maximum dry density

2. Earth backfill: 90% of maximum dry density

3.20 ADJUSTING:

A. Shrinkage:

1. Build embankments or backfill to a height above finished grade which will, in the opinion of the Engineer, allow for the shrinkage or consolidation of material. Initially, provide at all points, an excess of at least one percent of total height of backfill measured from stripped surface to top of finished surface.

2. Supply specified materials to build up low places when embankment or backfill settles below the finished grade at any time before substantial completion.

3.21 TOLERANCES:

A. Construct finished surfaces to plus or minus 1 inch (2.5 cm) of the elevations indicated.

B. Grade areas of cut and fill to plus or minus 0.20 foot (6.0 cm) of the grades indicated.

C. Complete embankment edges to plus or minus 6 inches (15 cm) of the slope lines indicated.

D. Provide the Engineer with adequate survey information to verify compliance with above tolerances.

3.22 PROTECTION:

A. Formulate excavation, backfilling, and filling schedule and procedures to eliminate possibility of undermining or disturbing foundations of partially and completed structures, pipelines and embankments or existing structures and pipelines.

3.23 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

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SECTION 32 12 00

FLEXIBLE PAVING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide flexible paving as indicated and in compliance with Contract Documents.

1. Scope includes:

a. Aggregate base course.

b. Asphalt concrete pavement.

B. American Association of State Highway and Transportation Officials (AASHTO):

1. M147: Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base, and Surface Courses.

2. M226: Standard Specification for Viscosity-Graded Asphalt Cement.

3. M320: Standard Specification for Performance-Graded Asphalt Binder.

4. T89: Standard Method of Test for Determining the Liquid Limit of Soils.

5. T90: Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.

6. T99: Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.

7. T104: Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.

C. ASTM International (ASTM):

1. C125: Standard Terminology Relating to Concrete and Concrete Aggregates.

2. D242: Standard Specification for Mineral Filler For Bituminous Paving Mixtures.

3. D946: Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction

4. D977: Standard Specification for Emulsified Asphalt.

5. D2027: Standard Specification for Cutback Asphalt (Medium-Curing Type).

6. D3381/D3381M: Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.

7. D6373: Standard Specification for Performance Graded Asphalt Binder.

D. State Department of Transportation (DOT) :

1. ODOT Specifications: Ohio Department of Transportation, Construction and Material Specifications, current edition.

1.02 PRICE AND PAYMENT PROCDURES:

A. Measurement and payment provisions and sharing of costs provisions described in the ODOT Specifications are not applicable to this project. Payment for all work, contained in this section and included by reference shall be considered as being included in the square yardage bid amount stated in the pavement items in the Bid Proposal and as defined in Section 01 29 01.

1.03 DEFINITIONS:

A. Gravel: Coarse aggregate resulting from natural disintegration and abrasion of rock or processing of weakly bound conglomerate.

B. Crushed Gravel: The product resulting from the artificial crushing of gravel with substantially all fragments having at least one face resulting from fracture.

C. Crushed Stone: The product resulting from the artificial crushing of rocks, boulders, or large cobblestones, substantially all faces of which have resulted from the crushing operation.

1.04 SUBMITTALS:

A. Submit the following shop drawings in accordance with Section 01 33 00.

B. Test Results:

1. Base course testing results.

C. Submit haul route, procedures, and schedule of operation times.

1.05 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Sustainability Standards Certifications.

C. Codes and Standards: Comply with the latest edition of State highway or transportation department standard specifications and with local governing regulations.

1.06 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

B. Transport bituminous mixtures in covered trucks whenever:

1. Rainy weather, or

2. Air temperature is less than 60 degrees F (16 degrees C).

C. Adjust weight, type, capacity, haul routes, and method of operation of hauling vehicles so that:

1. No damage results to existing streets, subgrade or base course, and

2. Noise and air pollution levels are not noticeably increased along selected haul route.

D. Haul routes through residential areas shall be avoided.

E. Submit haul route, procedures for transport, and schedule of operation times to Owner for acceptance.

1.07 PROJECT CONDITIONS:

A. Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 degrees F (10 degrees C), and when temperature has not been below 35 degrees F (1 degrees C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

B. Place asphalt concrete surface course when atmospheric temperature is above 40 degrees F (4 degrees C), and when base is dry. Place binder course when air temperature is above 30 degrees F (-1 degrees C), and rising.

PART 2 - PRODUCTS

2.01 AGGREGATE MATERIALS:

A. According to AASHTO M147, unless noted otherwise.

B. Aggregate, including blended filler, shall have:

1. Liquid limit (LL) of not more than 25 as determined by AASHTO T89.

2. Plasticity index (PI) of not more than 6 as determined by AASHTO T90.

C. At least 45 percent, by count, of number of particles of aggregate retained on No. 4 (4.75 mm) sieve shall have at least one fractured face.

D. Remove oversized material by screening or crushing to required sizes.

E. Soundness: AASHTO T104, 5 cycles: No greater than 18 percent weight loss.

F. Filler for Blending:

1. Use filler for meeting gradation requirements or for satisfactory binding of material. Uniformly blend with base course material at screening plant [or on road].

2. Obtain material from sources accepted by Engineer.

3. Material shall be free of agglomerations or lumps, and contain no more than 15 percent of material retained on No. 4 (4.75 mm) sieve.

2.02 AGGREGATE BASE COURSE:

A. Gradation: As per ODOT Specifications, Item 304.

2.03 PAVEMENT MATERIALS

A. General:

B. Crushed stone, crushed gravel, crushed slag, and sharp-edged natural sand.

C. Sand prepared from stone, blast-furnace slag, or gravel, or combinations thereof may be used if required to suit local material availability.

D. Mineral Filler: Rock or slag dust, hydraulic cement, or other inert material complying with ASTM D242.

E. Surface Course Aggregate: ODOT Specifications, Item 441 Asphalt Concrete Surface Course, Type 1, (448), PG64-22.

F. Asphaltic Materials:

1. Prime Coat: ODOT Specifications, Item 408.

2. Tack Coat: ODOT Specifications, Item 407.

G. Asphaltic Materials:

1. Asphalt Cement:

a. Performance Grade: [AASHTO M320] [ASTM D6373]

(1) [PG 64-22]

b. Viscosity Grade: [AASHTO M226] [ASTM D3381/D3381M]

(1) [AC-2.5] [AC-5] [AC-10] [AC-20] [AC-40].

2. Prime Coat: Cut-back asphalt type; ASTM D2027 MC-30, MC-70 or MC-250.

3. Tack Coat: Emulsified asphalt; ASTM D977 or D2397; SS-1, SS-1h, CSS-1 or CSS-1h, diluted with one part water to one part emulsified asphalt.

4. With the exception of CMS-2, asphalt for tack coat may be diluted with 50 percent water provided that the resulting material produces a uniform application of the tack.]

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Check subgrade as to soundness, outline, and contour.

3.02 SUBGRADE PREPARATION:

A. Scrape down subgrade bumps and irregularities to obtain smooth, even surface.

B. Remove and replace soft or spongy areas as specified in Section 31 23 00.

3.03 PAVEMENT PREPARATION:

A. Remove loose material from compacted base course immediately before applying herbicide treatment or prime coat.

B. If base course becomes rutted, loose or uneven due delays in placing subsequent courses then proof roll prepared surface to check for unstable areas. Provide additional compaction or remove unstable areas, backfill and compact. Do not begin paving work until deficient areas have been re-graded and corrected and are ready to receive paving.

C. Prime Coat: Apply primer in accordance with ODOT Specifications, Item 408.

D. Tack Coat: Apply tack coat in accordance with ODOT Specifications, Item 407.

3.04 BASE COURSE INSTALLATION:

A. Place materials when surface is dry and atmospheric temperature is above 40 degrees F (4.4 degrees C).

B. Construct in two or more layers of approximate equal lifts; maximum compacted lift is 6 inches (15 cm).

C. Layers placed upon loose sand subgrade, prone to displacement while compacting, shall be placed in a single compacted lift of 8 inches (20 cm).

D. Deposit material on foundation or previously placed layer to minimize segregation and facilitate spreading to uniform layer.

E. If blending of materials is done on roadway, inter-mix aggregate and blending material by blade graders, discs, harrows or other equipment to produce uniform distribution or gradation throughout finished mixture. Avoid excessive manipulation or mixing which will cause segregation between coarse and fine materials.

F. Place and spread each layer to thickness, width, and contour.

G. Compact each layer before proceeding to subsequent layers. Compact to 95 percent of maximum dry density, unless noted otherwise. Refer to Section 31 23 00 for required compaction and testing requirements.

H. Prior to and during compaction shape material and maintain to dimensions and contour. Keep surface of each layer true and smooth.

3.05 PLACING MIX:

A. Place asphalt pavement in accordance with ODOT Specifications, Item 401 and Item 441.

3.06 ROLLING:

A. General: Begin rolling when mixture will bear roller weight without excessive displacement. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

B. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.

C. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.

D. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.

E. Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.

3.07 FIELD QUALITY CONTROL:

A. Base Course Testing:

1. Optimum Moisture Content and Maximum Density: Comply with AASHTO T99, Method C, with replacement of fraction of aggregate retained on 3/4 inch (19 mm) sieve. Replace with No. 4 (4.75 mm) to 3/4 inch (19 mm) material.

B. Pavement Testing:

1. General: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving.

2. Thickness Tolerances: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:

a. Base Course Thickness: Less than 1/4-inches (6 mm), plus or minus.

b. Surface Course Thickness: Less than 1/4-inches (6 mm), plus or minus.

3. Surface Smoothness Tolerances: Test finished surface of each asphalt concrete course for smoothness, using 10-foot (3-meter) straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding following tolerances for smoothness.

a. Surface Course: 1/8-inches (3 mm).

b. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template, 1/4 inches (6 mm).

c. Profile and Section: Variation from true shall not exceed +/- 3/8-inches (9.5 mm).

3.08 PROTECTION:

A. After final rolling:

1. Do not permit vehicular traffic on pavement until it has cooled and hardened.

2. Protect paving from traffic until mixture has cooled enough not to become marked.

3.09 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

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SECTION 32 13 00

RIGID PAVING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Section includes:

1. Provide rigid paving as indicated and in compliance with Contract Documents.

1.02 REFERENCES:

A. American Concrete Institute (ACI):

1. 305R: Hot Weather Concreting.

2. 306R: Cold Weather Concreting.

3. 330.1: Specification for Unreinforced Concrete Parking Lots.

B. ASTM International (ASTM):

1. C33/C33M: Standard Specification for Concrete Aggregates.

2. C138/C138M: Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete.

3. C150/C150M: Standard Specification for Portland Cement.

4. C173/C173M: Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.

5. C231/C231M: Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

6. C260: Standard Specification for Air-Entraining Admixtures for Concrete.

7. C309: Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.

8. C494/C494M: Standard Specification for Chemical Admixtures for Concrete.

9. C1315: Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.

10. C1602/C1602M: Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.

11. D1751: Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

12. D6690: Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

D. ODOT Specifications: Ohio Department of Transportation (ODOT) Construction and Material Specifications, current edition.

1.03 PRICE AND PAYMENT PROCDURES:

A. Measurement and payment provisions and sharing of costs provisions described in the ODOT Specifications are not applicable to this project. Payment for all work, contained in this section and included by reference shall be considered as being included in the square yardage bid amount stated in the pavement items in the Bid Proposal and as defined in Section 01 29 01.

1.04 DEFINITIONS:

A. Cold Weather: Refer to ACI 306R. A period when for more than three successive days the average daily outdoor temperature drops below 40 degrees F (5 degrees C). The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight. When temperatures above 50 degrees F (10 degrees C) occur during more than half of any 24-hour duration, the period shall no longer be regarded as cold weather.

B. Hot Weather: Refer to ACI 305R. Any combination of the following conditions that tend to impair the quality of freshly mixed or hardened concrete by accelerating the rate of moisture loss and rate of cement hydration, or otherwise resulting in detrimental results.

1. High ambient temperature.

2. High concrete temperature.

3. Low relative humidity.

4. Wind velocity.

5. Solar radiation.

1.05 SUBMITTALS:

A. Submit the following shop drawings in accordance with Section 01 33 00.

1. Concrete: Aggregate, cement, and admixtures product data.

2. Joint material product data.

3. Compound product data.

4. Concrete Test Results

1.06 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

1.07 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Aggregate Base: Minimum 4 inches (100 mm) thick, unless noted otherwise.

1. Aggregate: ODOT Specifications, Item 304.

2.02 CONCRETE FORMWORK:

A. Forms: ODOT Specifications, Item 451.

2.03 CONCRETE:

A. Concrete: ODOT Specifications Item 499 Class QC MS.

B. Water: Clean and not detrimental to concrete.

C. Thickness: As indicated.

2.04 CONCRETE REINFORCEMENT:

A. Reinforcing Steel: ODOT Specifications, Item 451, and as shown on the details provided.

2.05 CONCRETE FINISHES:

A. See ODOT Specifications for additional requirements.

B. Pavement: Float and broom finish per ODOT Specifications, Item 451.

C. Float and normal broom finish.

2.06 JOINTS:

A. Expansion Joint Filler: ODOT Specifications, Item 705.03.

B. Joint Sealer: Hot applied joint sealer, ODOT Specifications, Item 704.05, ASTM D6690, Type II.

2.07 ACCESSORIES:

A. Curing Compound: White pigmented type.

B. Curing Compound: ODOT Specifications, Item 705.07.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Do not place pavement on frozen subgrade.

3.02 PREPARATION:

A. Excavate and shape subgrade to line, grade, and cross section.

B. Remove all soft subgrade material encountered while compacting and backfill with aggregate base.

C. Repeat fine grading and compaction of subgrade areas which have been subjected to vehicular construction traffic and equipment.

D. Moisten aggregate base immediately before placing concrete to minimize absorption of water from fresh concrete.

E. Provide concrete surfaces that are clean and dry - free of oil, dirt or foreign materials immediately before application of compounds or painting.

3.03 COMPACTION:

A. Refer to Section 31 23 00 for additional compaction requirements.

B. Moisture: Maintain moisture content that is 3 percent of optimum moisture to attain required compaction density.

C. Subgrade: Compact as specified in Section 31 23 00.

D. Aggregate Base: Compact as specified in Section 31 23 00.

3.04 FORMWORK:

A. Set, align, and brace forms so that the pavement will meet the tolerances specified.

B. Apply form release agent to inside face of forms before placing concrete.

C. The edge of previously placed concrete may be used as a form. Do not apply form release agent to previously placed concrete, unless prevention of bond between the new and the old concrete is desired.

3.05 PLACING CONCRETE:

A. Place concrete on uniform aggregate base.

B. Place concrete in conformance with ODOT Specifications Item 451.

C. Consolidate and strike off to proper elevation.

D. Place concrete continuously to prevent formation of "cold joints".

E. Where placing operations stop, install bulkhead to form straight joint.

F. Texture pavement surface with broom.

G. Follow recommendations in ACI 305R when concreting during hot weather.

H. Follow recommendations in ACI 306R when concreting during cold weather.

3.06 JOINTS:

A. Joint Spacing: Maximum allowable is 30 times the pavement thickness.

B. Make contraction joints by sawing, tooling or installing insert with no exceptions noted to depth of 1-1/4 inches (32 mm).

C. Cut saw joints as soon as possible without raveling concrete edges.

D. Install full depth expansion joints using 1/2-inch (15 mm) thick joint material around castings and where pavement abuts structures.

3.07 REPAIR/RESTORATION:

A. Repair damaged work by replacing with new pavement to the nearest construction isolation joint.

3.08 FINISHING:

A. Float: Use magnesium or aluminum hand floats or power floats with slip on float shoes after concrete has stiffened to point where 1/4-inch (6 mm) maximum indentation can be imparted by normal foot pressure. Do not use combination blades for floating.

B. Float finish shall result in uniform smooth granular texture.

C. After floating, check slab tolerances with 10-foot (3 metre) straightedge. Fill low spots with fresh concrete.

D. Do not sprinkle with dry cement or add water.

E. Broom Finish:

1. Normal Broom Finish: Use fine, soft-bristled broom to produce a non-skid surface.

2. Texture parallel to travel direction of pavement.

3. Texture shall be reviewed by Engineer.

3.09 TOLERANCES:

A. Construct pavement to comply with the following tolerances:

1. Elevation: 3/4 inch (19 mm).

2. Thickness: +3/8 inch (+10 mm), -1/4-inch (-6 mm).

3. Surface: In any direction, the gap below a 10-foot (3 metre) unleveled straightedge resting on highspots shall not exceed 1/2-inch (13 mm).

B. Joint reinforcement: Tie bars-alignment of tie bar end relative to line perpendicular to edge of pavement: 1/2-inch per foot (13 mm per 300 mm) of tie bars.

C. Dowels:

1. Lateral alignment and spacing: 1 inch (25 mm).

2. Vertical alignment: 1/4-inch (6 mm).

3. Alignment of dowel bar end relative to line perpendicular to edge of pavement: 1/4-inch per foot (6 mm per 300 mm) of dowel

D. Joint spacing:

1. Contraction joint depth (slab thickness): +1/4-inch (+6 mm), -0 inch (-0 mm).

2. Joint width: +1/8-inch (+3 mm), -0 inch (-0 mm).

3.10 FIELD QUALITY CONTROL:

A. Refer to Section 31 23 00 for compaction and testing requirements.

B. Submit compaction test results to Engineer for review.

C. Concrete Testing: Cylinders shall be taken for every pour and tested by an independent testing facility as per ODOT Specifications Item 455. Maintain records of placed concrete including: record date, location of pour, quantity, air temperature, and test samples taken. Submit test results to Engineer for acceptance.

D. Defective Concrete: Shall be replaced at Contractor's expense.

3.11 PAINTING AND STRIPING:

A. Refer to Section 32 17 00 for additional requirements.

B. Paint pavement markings and striping after concrete has cured for at least 14 days.

C. Protect markings from traffic until completely dry to prevent tracking.

3.12 PROTECTION:

A. Protect concrete from damage and replace if damage occurs.

B. Protect pavement from traffic for a minimum of 3 weeks of ambient temperatures above 40 degrees F (4 degrees C).

C. Do not open the pavement to vehicular traffic until the in-place compressive strength is at least 4000 psi (21 MPa) or until the pavement is accepted by the Engineer for opening to traffic.

3.13 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

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SECTION 32 16 00

CONCRETE CURBS, GUTTERS, AND SIDEWALKS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide concrete curbs, gutters, and sidewalks as indicated and in compliance with Contract Documents.

B. ASTM International (ASTM):

1. A82/A82M: Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.

2. A185/A185M: Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

3. A497/A497M: Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.

4. C33/C33M: Standard Specification for Concrete Aggregates.

5. C1602/C1602M: Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.

6. D1190: Standard Specification for Concrete Joint Sealer, Hot-Applied Elastic Type (Withdrawn).

7. D6690: Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

C. ODOT Specifications: Ohio Department of Transportation, Construction and Material Specifications, current edition.

1.02 PRICE AND PAYMENT PROCDURES:

A. Measurement and payment provisions and sharing of costs provisions described in the ODOT Specifications are not applicable to this project. Payment for all work, contained in this section and included by reference shall be considered as being included in the unit prices stated in the project Bid Proposal. Curbing unit prices shall be incidental to pavement square yardage unit prices where applicable.

B. Payment at the Contract price for the tender item shall be full compensation for all labor, equipment and material to do the work.

1.03 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1.04 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

1.05 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Water: Potable water or within the limits of ASTM C1602/C1602M.

B. Aggregate Base: Minimum 4 inches (10 cm) thick, unless noted otherwise.

1. Aggregate: ODOT Specifications, Item 304.

2.02 CONCRETE FORMWORK:

A. Forms: ODOT Specifications, Item 451.

2.03 CONCRETE:

A. Concrete: ODOT Specifications Item 499 Class QC MS and Item 452.

2.04 SIDEWALKS:

A. Concrete: Pedestrian Areas: 4 inches (100 mm) thick; Driveways: 6 inches thick; unless noted otherwise.

2.05 CONCRETE FINISHES:

A. See ODOT Specifications for additional requirements.

B. Sidewalks: Float and broom finish per ODOT Specifications, Item 608.

C. Curbs and Gutters: Broom finish ODOT Specifications, Item 609.

2.06 ACCESSORIES:

A. Expansion Joint Filler: ODOT Specifications, Item 705.03.

B. Joint Sealer: Hot applied joint sealer, ODOT Specifications, Item 704.05, ASTM D6690, Type II.

C. Curing Compound: ODOT Specifications, Item 705.07.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Excavate and shape subgrade to line, grade, and cross section.

B. Remove all soft subgrade material encountered while compacting and backfill with aggregate base.

C. Moisten aggregate base immediately before placing concrete to minimize absorption of water from fresh concrete.

D. Provide concrete surfaces that are clean and dry - free of oil, dirt or foreign materials immediately before application of compounds or painting.

3.02 COMPACTION:

A. Refer to Section 31 23 00 for additional compaction requirements.

B. Subgrade: Compact top 12 inches to 90 percent of maximum dry density, unless noted otherwise.

C. Aggregate Base: Compact each 12 inch lift to 90 percent of maximum dry density, unless noted otherwise.

3.03 CURB CONSTRUCTION:

A. According to ODOT Specifications, Item 609.

B. Fine grade and compact subgrade.

C. Place aggregate base and compact. Top of aggregate base shall be at the proper level to receive concrete.

D. Set forms on face of curb to eliminate horizontal joints within 7 inches (175 mm) of the top of curb.

E. Brace forms to prevent change of shape or movement in any direction resulting from the weight of the concrete during placement.

F. Construct short-radius curved forms to exact radius.

G. Construct curbs to line and grade indicated. Cross slope of ramps shall not exceed 1/4 inch per foot (20 mm per meter).

H. Construct curbs and ramps as indicated.

I. Expansion Joints: Place preformed asphalt-impregnated expansion joints at intervals not exceeding 45 feet (13.7 m) or less than 15 feet (4.6 m), at the beginning and end of curved portions of the curb, at each change in thickness in section, at the end of curbs at buildings and other structures, and at connections to existing curbs.

J. Contraction Joints: Place contraction joints in the curb at uniform intervals not exceeding 15 feet (4.6 m). Contraction joints shall be of the open-joint type. Construct by inserting a thin, oiled steel sheet vertically in the fresh concrete to force coarse aggregate away from the joint. Insert the steel sheet the full depth of the curb. After initial set has occurred in the concrete and prior to removing the front curb form, remove the steel sheet with a sawing motion. Finish top of curb with a steel trowel and finish edges with a steel edging tool. Make contraction joints by sawcutting the concrete before it cures.

K. Remove forms after concrete has set sufficiently to support its own weight.

L. Finish exposed surfaces of concrete by rubbing with a burlap sack or similar device that will produce a uniformly textured surface, free of form marks, honeycomb, and other defects.

M. Remove and replace defective concrete.

N. Finished curbs shall present a uniform appearance for both grade and alignment. Remove any section of curb showing abrupt changes in alignment or grade or that is more than 1/4 inch (6 mm) away from its location as staked and construct new curb in its proper location.

O. Apply curing compound to exposed surfaces after finishing concrete. Curing shall continue for a minimum of 5 days.

P. Allow at least 7 days before backfilling and compacting adjacent to curing concrete. Backfill with earth, free from foreign material and rocks that are 2 inches (5 cm) or larger. Tamp backfill firmly in place.

3.04 SIDEWALK CONSTRUCTION:

A. According to ODOT Specifications, Item 608.

B. Place, process, finish, and cure concrete according to ODOT Specifications Items 608 and 609, as applicable.

C. Sidewalk cross slope shall not exceed 1/4-inch per foot (20 mm per meter).

D. Slope sidewalks away from structures at 1/4-inch per foot (20 mm per meter), unless noted otherwise.

E. At locations where the new sidewalk is to abut existing concrete, saw concrete for a depth of 2 inches (5 cm), chip the old concrete down to sound material and a plane surface, clean the surface, and apply a neat cement paste just prior to pouring the new sidewalk.

F. Expansion Joints: Place preformed asphalt expansion joints at intervals not exceeding 45 feet (13.7 m) or less than 15 feet (4.6 m), where the sidewalk ends at a curb, and around posts, poles, or other objects protruding through the sidewalk. Place expansion joints between sidewalks and buildings or other structures.

G. Place preformed asphalt expansion joint material between back of curbs and sidewalks.

H. Provide contraction joints transversely to the walks at locations opposite the contraction joints in the curb and at intervals along the sidewalk such that the distance between contraction joints does not exceed 1.5 times the sidewalk width. These joints shall be 3/16-inch (4 mm) by one-fourth of the slab thickness weakened plane joints. They shall be straight and at right angles to the surface of the walk.

I. Broom sidewalk surface with a fine-hair broom at right angles to the length of the walk and tool at all edges, joints, and markings. Mark the walks transversely at 5-foot (1.5-meter) intervals with a jointing tool, unless noted otherwise. Upon completion of the finishing, apply a curing compound to exposed surfaces.

J. 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 (5 cm) away from its location as staked and construct new sidewalk in its proper location.

3.05 FINISHING:

A. Float (for sidewalks and flatwork):

1. Use magnesium or aluminum hand floats or power floats with slip on float shoes after concrete has stiffened to point where 1/4-inch (6 mm) maximum indentation can be imparted by normal foot pressure. Do not use combination blades for floating.

2. Float finish shall result in uniform smooth granular texture.

3. After floating, check slab tolerances with 10-foot (3 metre) straightedge. Fill low spots with fresh concrete.

4. Do not sprinkle with dry cement or add water.

B. Broom Finish:

1. Normal Broom Finish: Use fine, soft-bristled broom to produce a non-skid surface.

2. Texture shall be reviewed by Engineer.

3. Sidewalks: Texture perpendicular to direction of travel with trowel and radius edge using 1/4-inch (6 mm) radius.

4. Curbs and Gutters: Texture parallel to travel direction of pavement.

3.06 TOLERANCES:

A. Subgrade: Smooth and free from irregularities at the specified relative compaction. The subgrade shall be considered to extend over the full width of the base course.

1. Elevation: 1/2-inch (12 mm), plus or minus from the indicated grade and cross-section.

B. Forms: Check constructed forms are within tolerance by using a 10-foot (3 metre) straightedge along the top of forms. Allowable tolerance is:

1. Grade: 1/8-inch (3 mm) over 10 feet (3 m) (0.1 percent), plus or minus.

2. Alignment: 1/8-inch (3 mm), plus or minus.

3.07 FIELD QUALITY CONTROL:

A. Refer to Section 31 23 00 for compaction and testing requirements.

B. Submit compaction test results to Engineer for review.

C. Concrete Testing: Cylinders shall be taken for every pour and tested by an independent testing facility as per ODOT Specifications Item 455. Maintain records of placed concrete including: record date, location of pour, quantity, air temperature, and test samples taken. Submit test results to Engineer for acceptance.

D. Defective Concrete: Shall be replaced at Contractor’s expense.

3.08 PROTECTION:

A. Protect concrete from damage and replace if damage occurs.

3.09 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

SECTION 32 17 00

PAVING SPECIALTIES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide paving specialties as indicated and in compliance with Contract Documents.

B. Section includes:

1. Pavement marking.

1.02 REFERENCES:

A. American Association of State Highway and Transportation Officials (AASHTO):

1. M247: Standard Specification for Glass Beads Used in Pavement Markings.

2. M248: Ready-Mixed White and Yellow Traffic Paints.

C. Federal Specifications (FS):

1. TT-P-85E: Paint, Traffic, Solvent Based

2. TT-P-115E: Paint, Traffic, Solvent Based

1.03 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1. Material certificates.

1.04 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Sampling and Testing:

1. Provide material certificates from manufacturer stating that materials used meet specified requirements. Submit certificates to Engineer for acceptance.

1.05 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

B. Furnish paint in sealed containers that legibly indicate at time of use designated name, formula or specification number, batch number, color, date of manufacturer, manufacturer's name, formulation number, and directions.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Paint: Lane Marking Paint: Chlorinated rubber-alkyd type, AASHTO M248 Type F.

1. Width: Match Existing.

2. Color: Yellow or White (match existing).

3. Paint shall be homogeneous, easily stirred to smooth consistency, and show no hard settlement or other objectionable characteristics during storage period of 6 months.

B. Reflective Spheres: AASHTO M247 Type 1.

2.02 EQUIPMENT:

A. Machines, tools, and equipment used in performance of work shall be capable of applying stripe widths indicated, at paint coverage rate specified, and of even uniform thickness with clear-cut edges.

B. Paint Applicator:

1. Traffic Line Paint Applicator:

a. Self-propelled or mobile-drawn pneumatic spraying machine with suitable arrangements of atomizing nozzles and controls to obtain specified results.

b. Speed during application of not less than 5 miles per hour (8 km/h).

c. Spray mechanism tanks with air-driven mechanical agitators.

d. Equip with quick-action valves conveniently located, and include necessary pressure regulator and gauges in full view and reach of operator.

e. Provide paint strainers in supply lines to ensure freedom from residue and foreign matter that may cause malfunction of spray guns.

2. Provide pneumatic spray guns for application of paint for letters, handicapped symbols, and hand application of paint in areas where mobile paint applicator cannot be used.

C. Provide stencils for handicapped symbols and letters.

D. Sandblasting Equipment:

1. Includes air compressor, hoses, and nozzles of size and capacity required for cleaning surfaces to be painted.

2. Compressor shall be capable of furnishing not less than 150 cfm (70.8 L/s) of air at pressure of not less than 90 psi (0.6 MPa) at nozzle for each nozzle used.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Cure pavement surfaces for at least 30 days before applying pavement markings.

3.02 PREPARATION:

A. Sweep and clean surface to eliminate loose material and dust.

B. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water or combination of these methods.

C. Remove rubber deposits and other coatings adhering to pavement with scrapers, wire brushed, sandblasting, accepted chemicals or mechanical abrasion.

3.03 PAINTING:

A. Application

1. Apply paint pneumatically.

2. Apply evenly to clean, dry surfaces of pavement at rate producing initial (wet) thickness of 15 mils (381 micrometers), and only when air and pavement temperatures are above 40 degrees F (4.4 degrees C) and less than 90 degrees F (32.2 degrees C). Maintain paint temperature within these same limits.

3. Provide guide lines and templates to control paint application. Special precautions shall be taken in marking letters and handicapped symbols. Edges of markings shall be sharply outlined.

4. Maximum drying time requirements of paint will be enforced to prevent undue softening of bitumen and pickup, displacement or discoloration by tires of traffic. If there is deficiency in drying of markings, discontinue painting operations until cause of slow drying is determined and corrected.

5. Apply paint with equipment to produce uniform straight edges. Apply in 2 coats at manufacturer's recommended rates.

3.04 CLEANING:

A. Remove rubbish, debris, equipment, and excess material from site resulting from this work. Clean adjoining surfaces soiled by and during this work.

3.05 PROTECTION:

A. Protect markings from traffic until dry to prevent tracking.

3.06 CONTRACT CLOSEOUT:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

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 90 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 follows:

Seed Description	Percent by Weight
Kentucky Blue Grass (Poa prateusis)	35 to 40
Merion Kentucky Blue Grass	31
Fescue (Festuca 30 to 35 arundinacea var. KY31)	0
Perennial Rye (Lolium multiflorm)	30 to 35

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.

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 dills. 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 asphalt adhesive when the seeded area has a slope steeper than 4-feet horizontal to 1-foot vertical. Apply adhesive immediately after the mulch is placed. Apply adhesive at a rate of 6 to 7 gallons per 1,000 square feet.

3.05 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.

3.06 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.

3.07 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.

3.08 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 reseeding as required by condition and to satisfaction of Owner. Protection may be by installation of sod strips or other methods.

3.09 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 30.01

CONFINED SPACE ENTRY

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Specification shall outline minimum requirements for confined space operations throughout the work.

1.02 GENERAL

A. The Contractor shall be aware that Hydrogen Sulfide Gas is present in all underground structures connected to the City's sewer systems and has been known to accumulate in concentrations sufficient to cause serious harm or death to personnel who are not using adequate Personal Protective Equipment.

B. The Contractor's attention is drawn to the Occupational Safety and Health Administration, and the Regulations and Guidelines there-under pertaining to Confined Space Entry Work and in particular the requirements for conducting hazard/risk assessments and providing personal protective equipment (PPE).

C. The Contractor is responsible for all safety and confined space support throughout the project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 HAZARD ASSESSMENT

A. In conjunction with securing the site and obtaining underground clearances, the Contractor shall conduct a hazard assessment for each site requiring work within a sewer or manhole. The assessment shall identify and evaluate the hazards, including but not be limited to review of the following as it pertains to the work to be performed:

1. nature of the defect;
2. location of the defect in the sewer/manhole;
3. structural condition and amount of debris in the remaining sewer/manhole;
4. condition of the manholes up and downstream of the required repair;
5. atmospheric conditions in the manholes up and downstream of the required repair;
6. condition of adjacent downstream sewers; and,
7. flow in the sewer.

B. The hazard assessment shall be based on the Contractors review of video for the sewer(s) and site inspection of the manholes, sewers and external conditions. Prior to the inspection, the Contractor shall conduct the necessary atmospheric monitoring of the affected manholes and sewers to establish acceptable entry conditions.

C. Based on the results of the hazard assessment the Contractor shall determine if they can perform the stabilization repairs in a safe manner. If the Contractor decides to proceed with the internal repairs, they shall prepare a Safe Work Plan complete with the necessary controls and procedures required to maintain a safe working environment for the repair. Otherwise they shall notify the Engineer and jointly the Contractor and the Engineer shall review the nature of the work and determine alternative means of completing the work are required.

3.02 SAFE WORK PLAN

A. Subsequent to performing a hazard assessment the Contractor shall develop a safe work plan to address the potential hazards associated with each site. In addition to addressing the potential hazards the safe work plan shall address but not be limited to the following:

1. guidelines for confined space entry work established by The Occupational Safety and Health Administration;
2. provision for emergency response;
3. training and duties for entry personnel;
4. rescue and emergency services;
5. requirement for purging, ingesting, flushing and/or continuous ventilation to eliminate or control atmospheric hazards;
6. requirement for and provision of supplied air;
7. communication between members of the repair crew in the pipe and on the ground's surface;
8. current and forecasted weather conditions;
9. isolating the workspace by plugging of upstream sewers and monitoring of upstream flow levels;
10. provision of back-up equipment;
11. method of ingress into the sewer; and,
12. method of egress out of the sewer – forward and backwards.

B. The Contactor shall not enter the sewer or manholes to begin the work until they have completed a hazard assessment and safe work plan for the specific repair and reviewed the plans with their designated safety officer for acceptance. The safe work plan procedures and practices shall conform to all federal, state, and local codes, regulations and guidelines including Occupational Safety and Health Administration Regulations.

3.03 ENTERING THE MANHOLE AND SEWER

A. The Contractor shall enter the manhole/sewer and complete the work in accordance with their safe work plan and requirements for the repair contained herein.

B. If at any time during the repair the attendant and/or Contractor believes he cannot safely perform the work, they shall immediately stop the work and evacuate the sewer and manholes. The Contractor shall re-assess their safe work plan considering the reason for the work stoppage. The work shall only be resumed when the Contractor has deemed it safe to return by completing a re-assessment and safe work plan revision, where necessary.

C. If the Contractor deems the work cannot be safely completed by internal stabilization, they shall notify the Engineer and jointly the Contractor and the Engineer shall review the nature of the defect and determine alternative means of completing the work are required.

END OF SECTION

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SECTION 33 01 30.14

SEWER LINE CLEANING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. The Contractor shall clean all sewer segments designated for lining. The Contractor shall be solely responsible for means and methods of sewer cleaning. Cleaning of the sewers shall consist of the removal of all grease, sand, silt, solids, rags, roots, and other debris from each sewer segment, including sags within any sewer segment and including manholes. Selection of cleaning equipment and the method for cleaning shall be based on the condition and/or pipe material of the sewer segment at the time work commences and shall comply with this Specification. FLUSHING OF ANY SANITARY SEWER TO FACILITATE CLEANING ACTIVITIES WITHOUT THE CAPTURE OF SOLIDS AND DEBRIS IS EXPRESSLY PROHIBITED.

B. The Contractor shall clean the sewers to a condition that does not jeopardize the design intent of the liner as described in the various other specifications.

C. Sewers designated for cleaning, shall be cleaned manhole to manhole using the step-cleaning method or similar described in this Contract for the entire length of the pipe using a high-pressure water jetter to remove loose or settled debris and shall operate the equipment so that the pressurized nozzle continues to move at all times. The pressurized nozzle shall be turned off or reduced anytime it is stationary or delayed in order to prevent damage to the sewer.

1.02 SAFETY

A. The Contractor shall be solely responsible for safety during the performance of all Work, and shall take satisfactory precautions to protect the sewer segments and appurtenances from damage that might be inflicted upon them by the use of cleaning equipment. Any damage inflicted upon a sewer segment or other public or private property as a result of the Contractor's cleaning operations, regardless of the cleaning method used and regardless of any other circumstance which may contribute to the damage, shall be repaired by the Contractor at their sole expense.

B. The Contractor shall not enter into any sewer segment or manhole where hazardous conditions may exist until such time as the source of those conditions is identified and eliminated by the Contractor and/or Owner. The Contractor shall perform all work in accordance with the latest OSHA confined space entry regulations, and shall coordinate work as required with local fire, police and emergency rescue units.

C. Whenever hydraulically propelled cleaning tools, which depend upon water pressure to provide their cleaning force, or any tools which retard the flow of water in the sewer segment are used, precautions shall be taken by the Contractor to ensure that the water

pressure utilized does not result in any damage or flooding to public or private property being served by the sewer segment(s) involved

PART 2 - PRODUCTS

2.01 FLUSHING CLEANING EQUIPMENT

A. High velocity cleaning equipment is to be capable of producing a flow rate of 80 gpm at 2,000 psi of pressure complete with the following.

B. Selection of nozzles capable of effectively cleaning and removing debris from the sewer and transporting debris in all sizes of the sewers to be cleaned.

1. Water tank.

2. Auxiliary engines.

3. Pumps.

4. Hydraulically driven hose reel with a wash down gun for cleaning manholes.

5. Approved backflow prevention device for filling water tank from a hydrant.

2.02 DEBRIS REMOVAL EQUIPMENT

A. Vacuum unit(s) used for removing sewer debris sewer to be complete with the following.

1. Positive displacement pumps or fans producing a minimum 700 liters per second of air movement.

2. Storage tank.

3. Minimum 6-inch diameter suction hoses attached to a hydraulic boom.

B. Configure the storage tank to allow the liquid portion of the debris to be returned to the sewer.

2.03 SOLID DEBRIS CUTTING AND INTRUDING SEWER SERVICE REMOVAL EQUIPMENT

A. Solid debris cutting equipment to consist of remote controlled hydraulically driven saw or blade cutters, remotely operated robots, or other types of equipment capable of removing solid debris such as encrustation.

B. Intruding sewer service pipe removal equipment to consist of remote controlled hydraulically driven cutters and reamers and remotely operated robotic routers or grinders capable of cutting back intruding sewer service pipes.

C. Select the cuttings equipment to be used considering debris type, intruding sewer service pipe material and sewer pipe condition.

2.04 GREASE AND ROOT REMOVAL EQUIPMENT

A. The Contractor may remove of excessive grease and / or roots using:

1. mechanical devices such as expanding root cutters and hydraulic procedures such as high-pressure jet cleaners.

2. hydraulically driven saw, grinder, or blade cutters; however, flushing the sewer or the use of "spin nozzles" to remove grease will not be permitted.

2.05 COMMUNICATION EQUIPMENT

A. Equip cleaning crews with cellular telephones and a suitable communication system linking all crew members.

PART 3 - EXECUTION

3.01 MAINTENANCE OF TRAFFIC

A. Refer to 01 11 00.

3.02 SEWER CLEANING - FLUSHING

A. The Contractor shall immediately notify the Engineer if believed that this level of cleaning will cause a sewer collapse due to the existing deterioration of the host pipe. The Engineer's determination whether to continue or stop work is final.

B. The cleaning process shall be carried out using the step-cleaning method or similar using the appropriate carrying capacity of each jetter nozzle for the respective sewer pipe height and shape. This means that the Contractor shall clean an initial portion of the pipe for a length appropriate to the carrying capacity of each jetter nozzle, sewer pipe height and shape and level of debris encountered, pulling back debris to the manhole. The Contractor shall then clean successive increments of pipe in the same way, each time pulling the displaced debris in solution back over increments of pipe previously cleaned. The Contractor will complete the cleaning using the step method approach through the entire segment of the pipeline with a high-pressure water jetter to ensure the sewer is adequately cleaned to complete the work. Adequately cleaned meaning debris removed until 0% of the cross-sectional area is obstructed by debris. All sediments and residual wastes shall be evacuated from each successive downstream manhole as the cleaning progresses.

C. Under no circumstances shall sewage or solids removed from the sewer line be dumped onto streets, catch basins, storm drains, or receiving waters.

D. The Contractor shall monitor the entire cleaning process with CCTV where possible.

E. All debris removed maybe be disposed of at the Elyria Wastewater Pollution Control Plant. Coordinate disposal with the City.

F. During the final cleaning pass, the CCTV inspection camera shall be mobilized to inspect the sewer segment while the jet nozzle pulls water away from the camera, drawing any water level down to maximize the exposure of the sewer pipe circumference.

G. In the event the Contractor is unable to completely perform CCTV inspection or cleaning from both directions due to obstructions (with the exception of a cross bore or collapse), the Contractor must inform the Engineer of this immediately. Upon approval by the Engineer, the Contractor shall have the obstructions removed using specialty cleaning equipment capable of removing the obstruction and simultaneously viewing the cleaning activity from the same vantage point in order to view the cleaning operation and not cause any damage to the host pipe. Even with approval by the Engineer to perform the work, any damage done to the sewer by the equipment or if the equipment becomes stuck shall be at the Contractor's expense to remedy.

H. During all sewer cleaning operations, satisfactory precautions shall be taken to protect the sewer lines from damage that might be inflicted by the improper use of cleaning equipment. Whenever hydraulically propelled cleaning tools which depend upon water pressure to provide their cleaning force or any tools which retard the flow of water in the sewer line are used, precautions shall be taken to ensure that the water pressure created does not cause any damage or flooding to public or private property being served by the sewer segment involved.

I. The Contractor shall remove the upstream manhole cover during sewer cleaning.

J. The distance required for the nozzle to travel in the sewer shall be limited to one manhole-to-manhole sewer section unless approved by the Engineer.

K. No decanting shall occur within 3 sewer sections upstream of a lift station. If decanting is required, it shall be done immediately downstream of the lift station.

L. Cleaning of sewers not meeting requirements of this specification shall be rejected. The Engineer shall instruct the Contractor to remobilize, reclean and reinspect the asset as per the specifications to the satisfaction of the Engineer unless the Contractor can demonstrate site limitations and conditions that prevent adequate cleaning. Additional costs incurred by the Contractor associated with the recleaning and reinspection shall be the responsibility of the Contractor.

3.03 REMOVAL OF EXCESSIVE GREASE AND/OR ROOTS

A. Grease and or roots that cannot be removed through typical cleaning efforts shall be cut and removed from the sewer as directed by the Engineer where excessive grease and root intrusion prevents passage of the camera or inspection platform. Special

precautions should be exercised during the cleaning operation to assure removal of visible roots from the joint area.

B. Monitor the entire removal operation and while the removal equipment is travelling within the pipe to reach the work area by closed circuit television (CCTV).

3.04 SOLID DEBRIS CUTTING

A. The Contractor will cut and remove solid debris from the sewers for the limits identified by the Engineer from the post cleaning sewer inspection where physically attached solid debris intrusion prevents passage of the camera or inspection platform. Special precautions should be exercised during the cutting operation to assure removal of solid debris from the joint area.

3.05 INTRUDING LATERAL CONNECTIONS:

A. Where specified, the Contractor shall cut/grind the intruding service connection by using a remote grinding/cutting device capable of removing concrete, vitrified clay, PVC, and other types of pipe material. The device shall be specifically designed to cut/grind intruding service connections. The Contractor shall use remote CCTV equipment to monitor the progress of the work and ensure that the service connection is not damaged.

B. The intruding service connections shall be cut/ground flush to the main sewer pipe without scouring or damaging the main sewer or service connection. All cuttings must be screened, collected, and removed from the sewer for proper disposal.

C. During the pre lining CCTV inspection, the Contractor shall slowly pan the entire circumference of the trimmed connection to verify the quality of the work.

3.06 FLOW CONTROL

A. Undertake flow control where required in accordance with Section 33 34 35.

3.07 BLOCKAGES PREVENTING CLEANING

A. If cleaning of an entire sewer section cannot be successfully performed from one manhole, equipment shall be set up on the other manhole and cleaning again attempted. No additional payment allowance shall be made for reverse set-ups. If on reverse set-up successful cleaning also cannot be performed or equipment fails to traverse entire sewer line section, it shall be assumed that a major blockage or defect exists, and cleaning effort shall be abandoned.

B. The Contractor shall determine the location of major blockage(s) by measuring length of hose or rod inserted from manholes at each end and immediately report location of blockage(s) to the Engineer. The Contractor shall note these conditions in its field log.

C. The Contractor shall recognize that there are some conditions such as broken pipe and major blockages that prevent cleaning from being accomplished or where damage could

result if cleaning were attempted or continued. The Engineer shall be immediately notified by the Contractor of any and all conditions which in the opinion of the Contractor warrant termination of cleaning activities. If the Contractor's cleaning equipment becomes lodged in a sewer, it shall be removed by the Contractor at no additional cost to the Owner. This shall include excavation and repair of the sewer, underground utilities, backfilling, and surface restoration.

3.08 DEBRIS REMOVAL AND DISPOSAL

A. The Contractor shall remove all sludge, dirt, sand, rocks, grease and other solid or semisolid material and debris resulting from the cleaning operations from the downstream manhole of the sewer segment being cleaned. Passing material from sewer segment to sewer segment shall not be permitted. In the event that sludge, dirt, sand, rocks, grease and other solid or semisolid material or debris resulting from the cleaning operations are observed and/or detected by the Engineer or designated representative as passing to downstream sewer segment(s), the Contractor shall be responsible for cleaning such downstream sewer segment(s) at no additional cost to the Owner.

B. The Contractor shall be responsible for the handling, hauling and disposal of all debris, silt, and accumulated solids removed from the sewer. All debris, silt and solids removed by the Contractor shall be disposed of at Elyria Wastewater Pollution Control Plant and in accordance with all appropriate codes, rules and regulations for the handling and disposal of such materials. Under no circumstances shall the removed sewage or solids be dumped onto streets or into ditches, catch basins, storm drains, sanitary or combined sewer manholes, or otherwise improperly disposed. If sewage is unintentionally spilled, discharged, leaked, or otherwise deposited in the open environment, The Contractor shall be responsible for any clean-up and disinfection of the affected area, and shall comply with all local, State and Federal regulatory requirements regarding spills. Improper disposal of sewage or solids removed from the sewers may subject the Contractor to fines imposed by the Owner or other regulatory entities. In addition, the Contractor may be subject to civil and/or criminal penalties for improper disposal of removed materials under the law.

3.09 ACCEPTANCE:

A. Acceptance of sewer line cleaning will be based on the pre-lining inspection per Section 33 01 30.16. If cleaning is deemed unsatisfactory, the Contractor shall re-clean and re-inspect the sewer line until cleaning is shown to be satisfactory, at no additional cost to the Owner.

END OF SECTION

SECTION 33 01 30.16

SEWER INSPECTIONS

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This specification describes the requirements for obtaining sewer measurements and CCTV inspections required to facilitate the specified rehabilitation work.

1.02 REFERNCES

A. National Association of Sewer Service Companies (NASSCO) Pipeline Assessment Certification Program (PACP).

B. National Association of Sewer Service Companies (NASSCO) Lateral Assessment Certification Program (LACP).

1.03 OPERATOR QUALIFICATIONS FOR INSPECTION AND CONDITION CODING

A. Ensure each operator is fully trained and certified in all aspects of sewer inspections and capable of making accurate observations and recording all conditions that may be encountered in the sewer.

B. Inspection shall be performed by certified operators in accordance with the National Association of Sewer Service Companies (NASSCO) having attained and retained their "Pipeline Assessment Certification Program" (PACP) and where required "Lateral Assessment Certification Program" (LACP) certification.

PART 2 - PRODUCTS

2.01 SEWER CCTV VIDEO INSPECTION EQUIPMENT

A. A complete CCTV system, including a camera, lighting, electronic footage counter, computer and monitor, mobile television studio, and digital video recorder/player used for the televising operations shall be specifically designed for sewer/sewer inspections. Video inspection is to consist of the following:

1. Video camera capable of panning 360° and tilting 270° with optimum picture quality provided by focus and iris adjustment. Focal range to be adjustable from 3 inches to infinity.

a. For sewer lateral inspections 6" diameter or less, push camera from a cleanout or lateral launch from the mainline without pan and tilt is acceptable.

2. The inspection equipment shall be capable of inspecting a minimum 600 linear feet of sewer line without access to a manhole in between.

    a. Lateral launch or push cam shall be capable of 150 linear feet of sewer lateral inspection without access to a cleanout in between.

3. The inspection equipment shall be capable of clearly televising the interior of 6-inch to 60-inch height sewer sizes, with specific sizes noted in the Rehabilitation Table.

4. The camera should be specifically designed and constructed for such sewer inspections and shall have above ground control for forward and backward movement in the sewer using tracked, wheeled, or tethered skid or floatation devices.

5. CCTV camera unit will be equipped with a locating sonde as required to locate deep utilities and sewers, 10 feet deep or greater or buried structures and junctions that cannot be located or accessed from the ground surface.

6. Capture the inspections in digital format in color from the live video source to the following minimum requirements:

    a. Camera resolution at the point of capture / Picture Size: 720 x 480 @ 29.97 frames per second

    b. Data/Bit Rate: 6.0 Mbit/sec

7. Inspections are to be provided on archival grade HDD to the following minimum requirements:

    a. Compression format: MPEG-4

    b. Container: MP4

    c. Video codec: H.264

    d. Picture Size: 720 x 480 @ 29.97 frames per second

    e. Data/Bit Rate: 6.0 Mbit/sec

8. Videos exhibiting any upscaling of the resolution that differs from the resolution obtained by the camera lens at the point of capture shall not be accepted.

9. Any manipulation of the aspect ratio that differs from the aspect ratio obtained by the camera lens at the point of capture shall not be accepted.

10. Lighting for the camera shall be waterproof and suitable to allow a clear picture of the entire periphery of the pipe. The camera shall be operative and provide a clear picture in 100 percent humidity conditions. Lighting shall be adjustable to allow an

even distribution of light around the sewer perimeter without loss of contrast, flare out of picture, or shadowing. Lighting shall illuminate the sewer or manhole ahead of the camera to be able to determine general condition, features and upcoming defects.

a. An unclear picture due to excessive lighting (image flare), the lack of lighting or the presence of fog, steam, or excessive humidity will be considered unsatisfactory. The Contractor is responsible for identifying and implementing corrective actions to obtain suitable video quality, such as using fans or ventilation systems to dissipate the fog or by the heating of incoming air to mitigate fog.

b. A blurred picture will be considered unsatisfactory. The Contractor is responsible for identifying and implementing corrective actions to obtain suitable video quality, such as having the camera lens cleaned prior to reinspection of the mainline.

c. The Contractor is responsible for presenting issues regarding questionable video quality immediately to the attention of the Engineer.

11. Video overlay equipment capable of superimposing a minimum of 15 lines with up to 30 characters per line of alphanumeric information onto the video recording.

12. The focal length is the intersection point between the camera lenses widest horizontal viewing angle and the pipe's side periphery (03 or 09 o'clock) when the camera is level and looking forward. The rear of the camera must be positioned at the start of the pipe where the camera's physical distance is added to the focal length. This total distance is known as the cable calibration distance or cable set point. Record the distance from the manhole to pipe interface to the cable calibration distance at the start of the inspection and adjust the distance reading so that zero is at the manhole to start of pipe interface.

13. Minimum requirements of in-line inspection technologies for CCTV video inspection equipment shall be:

a. Self-propelled rubber tired or crawler tractor capable of passing over minor surface imperfections including but not limited to broken joints and solid debris up to two (2) inches in height for pipe heights up to 18 inches.

b. Self-propelled rubber tired or crawler tractor capable of passing over minor surface imperfections including but not limited to broken joints and solid debris up to four (4) inches in height for pipe heights from 20 inches up to 34 inches.

c. Transport and cable capable of inspecting a minimum of 600 feet of sewer from a single access point and the complete inspection of the sewer from the start manhole to the finish manhole.

d. Lateral launch from the mainline or push camera from the cleanout with cable capable of inspecting a minimum of 150 feet of lateral from the connection at the mainline or cleanout.

e. Equipment shall be capable of continuously capturing digital video with no frame loss, regardless of the progression of the inspection for the entire length being inspected.

f. Transport equipment must be capable of allowing for adjustable camera height to be centered within pipe heights of up to and including 34 inches.

g. Incorporate a suitable distance-reading device to measure the location of the equipment in the pipe, to an accuracy of ±0.5% of the length of the inspection.

h. An electronic footage counter shall accurately measure the distance of the CCTV inspection equipment from the centerline of the starting manhole within +/- 2-ft. This measurement shall be displayed on the monitor and recorded on the video at all times. The importance of accurate distance measurements is emphasized.

14. Larger height sewers of 35 inches and greater shall be inspected using an in-line inspection platform, which shall:

a. Be capable of inspecting a minimum 1,500 linear feet of sewer line without access to a manhole in between.

b. Be operable under partially or fully submerged flow conditions.

c. Be operable in sewers of various cross-sections, and constructed of standard pipe materials including, but not limited to, brick, clay, concrete, PVC, HDPE, and steel.

d. Be tethered to facilitate extraction of the platform from the sewer, without causing damage to the sewer infrastructure, in the event the equipment fails or otherwise becomes uncontrollable within the sewer.

e. Be equipped with sufficient high intensity lighting to illuminate the larger diameter sewer for visual inspection.

f. Have capability for simultaneous data collection from multiple inspection sensors/technologies including, but not limited to, CCTV video inspection, LASER and SONAR scanning as necessary.

g. The use of Side Wall Scanning technologies resolution shall be at a level of resolution as per this specification to ensure pipe wall loss clarity is provided within the imagery. Viewing software shall be provided at no cost to the Owner or the Engineer to ensure the user has full autonomy when viewing

the sewer pipe. Pre-recorded video shall also be submitted for Side Wall Scanning technologies in addition to specialty autonomous viewing software and data. No water droplets, debris marks or similar shall exist on the lens that would cause image blur or inhibit the clear and uninterrupted view of the pipe during the inspection. Side Wall Scanning technology platforms shall be used having sufficient illumination within given diameters as per the camera manufacturer's recommendations, such as 48" or less.

15. Minimum requirements of in-line inspection technologies for CCTV video inspection equipment shall be:

    a. Equipment shall be capable of continuously capturing digital video with no frame loss, regardless of the progression of the inspection for the entire length being inspected.

    b. Incorporate a suitable distance-reading device to measure the location of the equipment in the pipe, to an accuracy of ±0.5% of the length of the inspection.

    c. An electronic footage counter shall accurately measure the distance of the CCTV inspection equipment from the centerline of the starting manhole within +/- 2-ft. This measurement shall be displayed on the monitor and recorded on the video at all times. The importance of accurate distance measurements is emphasized.

16. In areas where a self-propelled track-mounted platform is not possible to use during the inspections, the inspections shall be performed using a tethered or parachuted floated or skid system. The Contractor shall notify the Engineer prior to the use of the floated or skid platform.

2.02 RECORDING RESOLUTION

A. Provide a minimum of 400 lines of resolution around the periphery of the picture for digital MPEG video playback.

B. Confirm recording resolution if requested by the Engineer by recording a RETMA type resolution chart as follows.

    1. Set up camera and accessories for the recording to simulate an actual inspection i.e. video signal routed through the cable reel, video overlay system, etc.

    2. Record camera being introduced and reaching its final position for the test.

    3. Resolution chart is to fill the monitor screen;

    4. Resolution chart is to be illuminated evenly and uniformly without reflection and illumination source is to accurately simulate the lighting used in the sewer inspections.

5. Record test for a minimum of 30 seconds.

6. Identify the camera on the recording;

7. Perform the test at the start of a tape or digital recording.

2.03 SCREEN INFORMATION ON VIDEO RECORDINGS

A. Clearly display in legible letters for 30 seconds on the monitor and video recording at the start of each inspection a video overlay system containing the mandatory PACP header section information station in Section 3.13.

2.04 DIGITAL FORMAT VIDEO RECORDINGS

A. Capture the inspections in digital format in color from the live video source on archival grade HDD formatted to the following minimum requirements. Adjust requirements as required to achieve 400 lines of resolution specified in this Specification.

1. Camera resolution at the point of capture / Picture Size: 720 x 480 @ 29.97 frames per second

2. Data/Bit Rate: 6.0 Mbit/sec

B. Inspections are to be provided on archival grade HDD to the following minimum requirements:

1. Compression format: MPEG-4

2. Container: MP4

3. Video codec: H.264

4. Picture Size: 720 x 480 @ 29.97 frames per second

2.05 VIDEO CODING

A. Perform sewer condition coding in accordance with the requirements of the National Association of Sewer Service Companies (NASSCO) “Pipeline Assessment Certification Program” (PACP), “Lateral Assessment Certification Program” (LACP), and to version 7.0.0 of the manual or better.

B. Perform condition coding using certified operators in accordance with the NASSCO PACP and LACP. Ensure each operator is fully trained in all aspects of sewer inspection and capable of making accurate observations and recording all conditions that may be encountered in the sewers.

C. Operators failing to provide copies of their NASSCO certification and / or failing to meet the accuracy requirements on two occasions will not be permitted to code on the remainder of the Contract until they can demonstrate to the Engineer that they can code

in accordance with the requirements of the NASSCO PACP and LACP version 7.0.0 of the manual or greater.

D. Incorporate a suitable distance-reading device to measure the location of the equipment in the pipe, to an accuracy of ±0.5% of the length of the inspection.

PART 3 - EXECUTION

3.01 VERIFICATION OF EXISTING SEWER DIMENSIONS

A. Verify sewer dimensions and depths prior to design as follows:

1. Measure the distance between the center of the start and finish manholes on the ground surface above the sewer to the nearest 0.01 of a foot using a survey grade ISO 16331-1:2012(E) approved outdoor laser distance measurer capable of attaining 500 ft minimum steel tape distance, or alternative measuring methods approved by the Engineer, before beginning the sewer inspection. The center of the manhole will be based on the center of the manhole cover regardless of the manhole configuration. If bends are identified to exist within the sewer segment, the Contractor shall approximate the measurement on the ground surface using incremental distances to the approximate alignment of the sewer between the start and finish manholes, to the approval of the Engineer's Site Inspector.

2. Manhole invert depths (from the manhole rim) at the upstream, downstream, and any intermediate manhole.

3. Measure the diameter and cross-section of the sewer at the upstream and downstream manholes and at a minimum distance of 20 inches inside the sewer from each manhole.

4. Use calibrated calipers or other suitable measuring device capable of measuring accurately to +/- 1 mm to confirm cross section geometry at the following clock positions:

   a. 12:00 to 6:00

   b. 2:00 to 8:00

   c. 3:00 to 9:00

   d. 4:00 to 10:00

B. Obtain additional measurements for large diameter (larger than 24 inches) and for non-circular sewers sufficient to define the cross section to meet the design objectives for the rehabilitation system being utilized, including but not limited to:

1. The length of the inside perimeter (circumference) of the sewer at the upstream and downstream ends.

C. Estimate the remainder of the sewer dimensional requirements based on dimensional checks and the CCTV sewer inspection videos.

D. Submit host pipe lengths, depths, and dimensions to the Engineer in conjunction with the design submission and pre-design inspection where required.

3.02 SEWER INSPECTIONS

A. Perform the following sewer inspections as outlined herein:

B. The following methods may be employed:

1. Pre-Lining Inspection:

a. Perform after sewer cleaning and preparation.

b. Pre-Lining Inspections are not a pay item and shall be considered incidental to the cleaning and prep work operations.

c. The Pre-Lining Inspection shall confirm:

(1) Necessary cleaning and pipe preparation work, including internal and external sewer repairs, have been satisfactorily completed.

(2) Condition of the sewer pipe is consistent with the design conditions and the Specifications. The Contractor shall advise the Engineer of any condition that is contrary to the design conditions or assumptions made that may affect either long or short term performance of the liner prior to commencing lining.

d. Provide the Pre-Lining CCTV inspection a minimum of five (5) Business Days prior to lining for approval to proceed with the liner installation.

e. Full PACP or LACP coding required, as applicable.

2. Post-Lining Inspection:

a. Perform immediately following installation of the liner, after completion of sewer service reinstatement, and while flow control measures are in place.

b. Post-Lining Inspections are not a pay item and shall be considered incidental to the cleaning and prep work operations.

c. Perform Post-Lining Inspection where major street lane closures are required within 24 hours of completing the installation of the liner.

d. Intent is to confirm the adequacy of sewer service reinstatements and the fit and finish of the liner.

e. Post-Lining inspection shall be submitted within fifteen (15) Business Days of completion of the liner installation. Substantial Performance and Total Performance for the project will not be granted prior to submission and acceptance of the Post-Lining inspection CCTV and associated reports.

f. Full PACP or LACP coding required, as applicable .

C. Submit all inspection videos to the Contractor Administrator for review in accordance as specified herein.

3.03 SEWER INSPECTION REPORTS

A. Provide the Engineer with the following sewer inspection reports prepared in accordance with these specifications

1. Pre and post-lining inspection and reports before acceptance of the Work for Completion of Construction.

B. The Contractor shall maintain backup copies of all digital video and inspection data submissions for the duration of the Warranty Period.

C. The Contractor shall supply inspection data for review by the Engineer on a HDD.

D. The Contractor shall supply separately one (1) set of archival grade HDD format in accordance with Section 2.4 to the City upon completion of the project.

3.04 SEWER SERVICE REPORTS

A. The Contractor is responsible to determine the usage and status of all service connections connected to the sewer to be rehabilitated. Confirm exact location of all sewer services connected to the sewer being lined by dye testing, tracing, or other methods. Any additional investigative and/or remedial work resulting from improper identification of connected services shall be borne by the Contractor.

B. Submit a written Sewer Service Report for each liner location to the Engineer a minimum of five (5) Business Days prior to installation of liners. Provide the following information for each sewer service including CB leads and utility manhole drains.

1. Location of connection (chainage from upstream manhole and clock reference).

2. Diameter of sewer connection lateral.

3. Material type of connection.

4. Observed condition of connection.

5. Status of connection (active, inactive or unable to determine).

6. Property serviced including the address.

7. Sewer Service Reports shall be submitted in conjunction with the Pre-Lining CCTV Inspection submission.

3.05 SEWER CONDITION CODING

A. Perform sewer condition coding in accordance with the requirements of the NASSCO PACP and to Version 7.0.0 of the manual, or greater in accordance with this specification, and with the following additional requirements.

Pipe Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
General Information	1	Surveyed By (*Operator / PACP User Name*)	Yes	Yes
	2	Certificate Number	Yes	Yes
	3	Reviewed By	No	No
	4	Reviewer Certificate Number	No	No
	5	Owner	No	Yes
	6	Customer	No	Yes
	7	P/O Number (*Contract No.*)	No	Yes
	8	Work Order	No	Yes
	9	Media Label	No	Yes
	10	Project	No	Yes
	11	Date	Yes	Yes
	12	Time	No	Yes
	13	Sheet Number	Yes	Yes
	14	Weather	No	Yes
	15	Pre-Cleaning	Yes	Yes
	16	Date Cleaned	No	No
	17	Flow Control	No	No
	18	Purpose of Survey	No	Yes
	19	Direction of Survey	Yes	Yes
	20	Inspection Technology Used	No	Yes
	21	Inspection Status	Yes	Yes
	22	Consequence of Failure	No	No
	23	Pressure Value	No	No
Location	24	Drainage Area	No	No
	25	Pipe Segment Reference (*Asset ID*)	No	Yes*

Pipe Header Section	Field No.	Field Name	NASSCO Mandatory	REQUIRED (Yes / No)?
	26	Street (*Name and Number*)	Yes	Yes
	27	City	Yes	Yes
	28	Location Code	No	Yes
	29	Location Details	No	Yes
Pipe	30	Pipe Use	Yes	Yes
	31	Height (*Diameter*)	Yes	Yes
	32	Width	Yes	Yes
	33	Shape	Yes	Yes
	34	Material	Yes	Yes
	35	Lining Method	No	No
	36	Coating Method	No	No
	37	Pipe Joint Length	No	Yes
	38	Total Length (*Steel Tape Measurement*)	No	Yes
	39	Length Surveyed	No	Yes
	40	Year Constructed	No	No
	41	Year Renewed	No	No
Measurements	42	Upstream MH No.	Yes	Yes
	43	Upstream MH Rim to Invert	No	Yes
	44	Upstream MH Rim to Grade	No	No
	45	Upstream MH Grade to Invert	No	No
	46	Upstream MH Northing	No	No
	47	Upstream MH Easting	No	No
	48	Upstream MH Elevation	No	No
	49	Downstream MH No.	Yes	Yes
	50	Downstream MH Rim to Invert	No	Yes
	51	Downstream MH Rim to Grade	No	No
	52	Downstream MH Grade to Invert	No	No
	53	Downstream MH Northing	No	No
	54	Downstream MH Easting	No	No
	55	Downstream MH Elevation	No	No
	56	MH Coordinate System	No	No
	57	MH Vertical Datum	No	No
	58	GPS Accuracy	No	No
	59	Additional Information	No	Yes*

Yes* - when applicable/required.

3.06 CODING ACCURACY

A. Coding accuracy will be a function of the number of defects or construction features not recorded or omitted and the correctness of the coding and classification recorded. Coding accuracy is to satisfy the following requirements:

1. Header accuracy - 95%.

2. Detail accuracy - 85%.

B. Implement a formal coding accuracy verification system before starting the Work.

C. Verify coding accuracy on a random basis on a minimum of 10% of the inspection reports. Submit coding accuracy checks with the corresponding video recording.

D. Perform a minimum of two accuracy verifications for each operator for each week working and submit the results to the Engineer for review. Operators failing to provide copies of their NASSCO certification and / or meet the accuracy requirements on two occasions will not be permitted to code on the remainder of the Contract until they can demonstrate to the Engineer that they can code in accordance with the requirements of the NASSCO PACP version 7.0.0 of the manual or greater.

E. Re-code inspections not satisfying the accuracy requirements and verify the accuracy of the inspection immediately preceding and following the non-compliant inspection. Repeat the process until the proceeding and subsequent inspections meet the accuracy requirements.

3.07 ACCEPTANCE OF INSPECTIONS

A. Re-perform sewer and manhole inspections where the Engineer has determined the requirements of the specification have not been satisfied.

B. Correct non-compliant inspection submissions and resubmit the corrected inspections to the Engineer within 5 working days.

C. Repeat the process until the inspection submissions are accepted by the Engineer.

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. All 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.

1.04 UTILITY CONTACT LIST

A. The following utility owners shall be contacted prior to any excavation or work near their facilities. Contractor shall comply with Ohio Revised Code Section 153.64 and coordinate with all listed utilities.

1. ENGINEERING: Kathryn McKillips. City of Elyria, 131 Court Street, Ohio 44035. Phone: (440) 326-1444. Email: kmckillips@cityofelyria.org

2. WASTE WATER POLLUTION CONTROL: Shayne Stewart. City of Elyria, 1194 Gulf Road, Ohio 44035. Phone: (440) 366-2211 EXT. 5100. Email: sstewart@cityofelyria.org

3. WATER DISTRIBUTION: Dave Rothgery. City of Elyria, 851 Garden Street, Ohio 44035. Phone: (440) 322-2927. Email: drothgery@cityofelyria.org

4. ELECTRIC: Ohio Edison. Douglas Linn. 6326 Lake Avenue, Elyria, Ohio 44035. Phone: (440) 326-3268. Email: linndm@firstenergycorp.com

5. GAS: Columbia Gas of Ohio. Adam Woodie. 3101 North Ridge Road, Lorain, Ohio 44055. Phone: (440) 240-6144. Emergency Phone: (866) 632-6243. Email: awoodie@nisource.com

6. TELEPHONE: Windstream. Kevin Dembiec. 560 Ternes Avenue, Elyria, Ohio 44035. Phone: (440) 329-4247. Email: kevin.dembiec@windstream.com

7. TELEPHONE: Windstream. Geoffrey Hamm. 560 Ternes Avenue, Elyria, Ohio 44035. Phone: (440) 329-4245. Email: geoffrey.p.hamm@windstream.com

8. CABLE: Spectrum. Marty Vankuren. 576 Ternes Avenue, Elyria, Ohio, 44035. Phone: (216) 854-0755. Email: marty.vankuren@charter.com

9. CABLE: Spectrum. Dan McCafferty. 576 Ternes Avenue, Elyria, Ohio, 44035. Phone: (330) 351-3373. Email: daniel.mccafferty@charter.com

B. Contractor shall verify all contact numbers prior to mobilization and maintain an updated copy on site.

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 effect 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

SECTION 33 01 39.02

SEWER PREPARATION, REPAIRS AND STABILIZATION

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Sewer stabilization shall mean the internal repair of sewers and manholes by man entry techniques. Repairs are varied and may consist of holes in sewers with voids, missing bricks in sewers, obstructions and manhole base or riser repairs. Sewer stabilization repairs shall be carried out in accordance with this specification, prior to performing sewer lining.

B. The scope of work involved in sewer stabilization is as follows:

1. Secure the site and provide temporary traffic control.

2. Obtain all necessary underground clearances.

3. Conduct a hazard assessment, including identification and evaluation.

4. Develop a safe work plan.

5. Implement the necessary procedures and controls to control hazards and maintain a safe working environment.

6. Enter the manhole/sewer and perform the required repairs.

7. Clean-up the site.

PART 2 - PRODUCTS

2.01 CONCRETE

A. Concrete

1. Concrete for large internal repairs to sewers and internal void filling shall be in conformance with ODOT Item 511 QC1 concrete.

2. Patching and grouting of repairs to concrete and brick sewers and manholes shall be with a fast hardening high strength concrete repairing compound designed for underwater use

a. Approved products: Duro-Crete by C Chemicals or approved equal.

3. Flowable cement-stabilized fill for external void filling from the ground surface shall be CLSM in conformance with ODOT Item 613, Type 1 low strength mortar except no fly ash or slag permitted. The design mix used shall have a compressive strength of 50 psi.

2.02 MANHOLE COMPONENTS

A. Manhole components shall conform to section 33 30 00.

2.03 MANHOLE RECONSTRUCTION

A. Manhole reconstruction shall be in accordance with the details provided on the plans.

PART 3 - EXECUTION

3.01 SEWER REPAIRS AND PREPARATION WORK

A. Existing Sewer Design Conditions

1. The assessment of the liner system design conditions and site-specific repairs required to accommodate lining were based on the conditions observed from sewer inspections that were performed as part of the Sewer Inspection Program. Copies of these video inspections are available to the Contractor upon request.

2. The Contractor shall be aware the video inspections provided were completed immediately after sewer cleaning and the amount of sediment and debris present at the time of this Bid Opportunity may not be the same. The Contractor shall be responsible to determine the actual amount of sediment and debris in the sewers included in this Work.

B. The specific repair requirements applicable to each CIPP lining location is shown in the Rehabilitation Table.

C. Refer to Section 33 01 40 for additional site-specific conditions.

D. Observed sewer defects and cleaning/preparation works evident in the existing sewer inspection videos have been provided in the Rehabilitation Table.

3.02 SEWER CLEANING

A. Cleaning of sewers shall be completed in accordance with 33 01 30.14 and this Specification.

3.03 SEWER PREPARATION, STABILIATION, AND REPAIRS

A. The following sewer stabilization, repairs, and preparation work can be reasonably assumed to be required and shall be completed prior to undertaking the identified rehabilitation work:

1. General Preparation

2. Remove loose debris, solid debris, roots, and grease in accordance with Section 33 01 30.14.

3. Remove any remaining organic or biological materials.

4. Remove any loose or spalling concrete to a depth sufficient to provide a competent host pipe surface.

5. Remove any loose or damaged bricks and/or mortar.

6. Remove wall encrustations throughout.

7. Remove encrustations at service connections.

8. Grout sewer services as required following encrustation removal.

9. Remove intruding sewer connections in accordance with Section 33 01 30.14.

10. Reshape host sewer pipe invert to the original dimension and cross section at locations where the invert has completely deteriorated.

B. The following work shall be completed prior to the installation of CIPP liners:

1. In accessible sewers, prepare and fill all voiding, holes, and discontinuities in the host pipe wall greater than 2 inches in depth or 4 inches in diameter to provide a reasonably smooth surface against which to install the liner.

2. Fill voiding from any missing bricks with a cementitious repair product.

3. Repair any sources of infiltration to a level required to successfully complete the liner installation. In cases of severe infiltration "gushers" that contractor shall stop the infiltration via internal or external grouting methods. The grout used shall be appropriate for the environment and compatible with the liner.

C. The following site-specific repairs shall be completed prior to liner installation work as identified in the Rehabilitation Table.

D. The above is the minimum work program required, specific installation requirements for the chosen rehabilitation technology may require additional work beyond what has been specified herein. The Contractor is encouraged to familiarize themselves with the available CCTV data during tendering. Claims for additional costs related to prep work required to complete the installation where conditions are found to be consistent with the tendered condition of the pipeline will not be considered.

3.04 CONSTRUCTION METHODS:

A. Equipment Set Up

1. In accordance with the safe work plan for the repair, the Contractor shall set up the required safety equipment and controls to safely perform the work.

2. Specialized equipment to perform the repair work, such as lights, pressure washers, drills and chipping hammers shall in no way adversely affect the operation of the safety equipment required to perform the work.

3. Subsequent to completion of the repairs the Contractor shall remove all equipment form the sewers and manholes.

B. Internal Sewer Repairs

1. The Contractor shall repair the sewer fabric to restore the structural integrity of the sewer and provide a smooth flow surface conforming to the adjacent sewer/manhole cross-section and materials.

2. Large concrete repairs shall include a reasonable and limited level of surface preparation, including removal of unsound material and cleaning of the edges of the repair area, and setting of the required formwork and bracing. All formwork and bracing shall be removed from the sewer/manhole at the completion of the work.

3. Concrete patching shall include a reasonable and limited level of surface preparation, including removal of unsound material and cleaning of the edges of the repair area. The Contractor shall apply the patching material in accordance with the manufacturer's printed instructions.

4. Small voids in the backfill shall be filled with concrete or other approved material from the inside of the sewer prior to repairing the sewer fabric or by pressure grouting after completion of the repairs. The void shall be completely filled to prevent settlement of the backfill and provide a solid backing for the liner.

5. Pressure grouting shall be done in accordance with the manufacturer's printed instructions.

6. Large voids shall be filled from the ground surface after completion of the repairs. Holes shall be cored in the pavement or the pavement shall be saw cut and removed to permit vacuum excavation from the underside of the pavement to the void. The void shall then be completely filled with flowable cement-stabilized fill.

C. External Point Repairs

1. The Contractor shall provide CCTV video of any proposed EPRs for review and acceptance by the Contract Administrator prior to undertaking the work.

2. Complete external point repairs in accordance with the standard details included in the construction plans.

a. If the extent of the repair requires replacement of the connection tap, install a PVC wye fitting in accordance with the standard details provided in the Contract Documents.

D. Sewer Service Grouting

1. Sewer service grouting prior to lining shall be completed using a non-shrink, watertight cement grout, an appropriate polyurethane grout compound, or other approved grouting product, compatible with the existing host pipe. Grouting shall create a watertight and smooth inner surface for the host pipe and sewer service.

2. Sewer service grouting post lining shall fill voids between the sewer liner and the host pipe at sewer service openings with an appropriate polyurethane or other grouting system that is compatible with the liner system to form a smooth watertight connection.

E. Annulus Grouting for CIPP

1. Complete annulus grouting where voids are evident between the liner and the host pipe.

2. Annulus grouting post lining shall be completed using an appropriate cementitious or polyurethane grouting system that is compatible with the liner system.

3. A cementitious grout shall be used were grouting is required to achieve long term structural performance of the liner and host pipe. In all other applications, a polyurethane grout may be used to fill voids between the liner and host pipe.

4. The Contractor shall ensure short term buckling pressures of the installed liner are not exceeded during the grouting process.

5. A detailed grouting plan shall be submitted for all grouting operations, including the following:

a. Proposed grouting material complete with physical characteristics.

b. Grouting procedure complete with estimated grouting pressures.

c. Allowable grouting pressure based on the buckling capacity of the installed liner.

F. Manhole Repairs, Modifications, and Installations

1. Complete manhole repairs, modifications, and new installations identified in the Specifications or on the Drawings in accordance with the drawings and 33 30 00.

2. Complete cast-in-place concrete and reinforcing steel work as shown on the Drawings.

3.05 QUALITY CONTROL

A. Repair Acceptance

1. Upon completion of the designated repair the Contractor shall clean and perform the pre-lining inspection.

2. The Contractor shall not be responsible for defects in existing un-repaired sewer lines unless those defects are a direct result of the Contractor's operation.

B. Correction of Deficiencies

1. The Contractor shall correct deficiencies found in the sewer repair at their own cost including the cost of re-cleaning and re-inspection to confirm that the deficiencies are rectified in accordance with these specifications.

END OF SECTION

SECTION 33 01 40

CURED-IN-PLACE PIPE LINING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This specification covers the supply and installation of full segment, partial full segment (blind shot), and point repairs using cured-in-place pipe (CIPP).

1.02 REFERENCES:

A. ASTM D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials;

B. ASTM D2990 - Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics;

C. ASTM D5813 – Standard Specification for Cured-In-Place Thermosetting Resin Sewer Piping Systems;

D. ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-impregnated Tube;

E. ASTM F2019 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled In Place Installation of Glass Reinforced Plastic (GRP) Cured-In-Place Thermosetting Resin Pipe (CIPP)

1.03 DEFINITIONS:

A. Cured-in-place-pipe (CIPP) means trenchless sewer rehabilitation by installing a resin-felt composite structure which when cured will form a continuous-close fit liner within an existing sewer.

B. Full segment CIPP means CIPP extending from manhole to manhole or manhole to node (wye or tee connection to another sewer).

C. Partial full segment CIPP means CIPP extending from a manhole to an intermediate point within the sewer and shall generally be longer than 32 feet in length.

D. Non-Reinforced CIPP liners shall be considered any CIPP liner constructed from a non-reinforced felt.

E. Reinforced CIPP liners shall be considered any CIPP liner constructed from either a carbon fiber or glass fiber reinforced felt.

1.04 QUALIFICATIONS:

A. The Contractor shall have a minimum of three (3) years of continuous experience installing CIPP in pipe of a similar size and length as contained in this contract.

B. In order for the Contractor to be considered qualified, a minimum linear feet of the exact liner proposed must have been successfully installed previously by the Contractor as described below as applicable to the project:

1. The Contractor shall have installed a minimum of 50,000 linear feet of the CIPP liner system proposed for use for pipes less than or equal to 36 inches in diameter.

C. Documentation showing the Contractors experience shall be submitted with their Bid and include a description of the work performed, the time period of performance, and shall include the name, address, and telephone number of the owner agency or municipality.

1.05 SUBMITTALS:

A. Installation of CIPP liners shall not commence prior to submission and review of the submissions identified herein by the Engineer.

B. Provide CIPP designs for review by the Engineer a minimum of ten (10) Business Days prior to manufacturing of the liner.

1. CIPP thickness computations including all specified design checks identified in 1.06. Identify design assumptions based on a review of the sewer inspection that differ from the information provided in the Specifications for the existing sewer design conditions. Individual calculations shall be submitted for each liner and stamped by a Professional Engineer registered in the State of Ohio.

2. Name and manufacturer of the resin and felt tube proposed for each CIPP.

3. Means of liner installation and curing method (e.g. air/steam, water, air/UV).

4. CIPP material properties used for design.

5. Host pipe measurements identified by the Contractor in accordance with Section 33 01 30.16, including the following:

a. Sewer length

b. Host pipe dimensions

c. Sewer invert depths

6. Pre-design inspection where specified

7. Liner sizing. Identify under sizing from the measured circumference and anticipated liner stretch to form a close fit with the host pipe.

8. Other information that may reasonably be required by the Engineer to confirm the CIPP design proposed conforms to the specified requirements and design intent.

C. Provide resin samples within five (5) Business Days of a request by the Engineer. Samples shall be provided as follows:

1. Arrange for the manufacturer of the resin to forward a reference sample of each type of resin proposed for use on the works to a test laboratory designated by the Engineer to be used as a comparative reference sample for infrared spectrum testing.

2. When requested by the Engineer, deliver a representative sample from each resin batch to be used on the project before adding the catalyst from the wet-out facility to a test laboratory designated by the Engineer.

3. The Engineer will arrange and pay for an infrared analysis of the samples, if required for the project.

D. Submit a liner impregnation protocol that provides information on the following a minimum of five (5) Business Days prior to wet of out liners:

1. Resin impregnation method.

2. Designated location of the wet out facility.

3. Documentation that the resin to be used has not exceeded its shelf life as recommended by the manufacturer of the resin.

4. Volume and weight of resin to be impregnated into each liner and repair section including the proposed excess allowance for polymerization and migration (typically 7%) into cracks and joints of the host pipe.

5. Roller gap setting required to provide the final installed CIPP thickness based on the proposed volume of resin.

6. Details of the wet-out procedure for internal point repair CIPP.

E. Submit a liner installation protocol that provides information on the following a minimum of five (5) Business Days prior to installation of CIPP:

1. Proposed main line and sewer service flow control arrangements in accordance with 3.02. Note, flow control plans may be submitted separate from the liner installation protocol.

2. Installation and curing method complete with proposed equipment.

3. Liner installation specifics as per Clause 7.4 of ASTM F1216 for inversions, Clause 6.4 of ASTM F1743 for pull-in installations, and/or Clause 6.2 of ASTM F2019 for air inversion methods with reinforced tubes.

4. Details of pre-liner installation, if utilized.

5. A full curing protocol, including:

    a. Required curing heads and times as per Clause 7.6.3 of ASTM F1216 for inversions of non-reinforced tubes, Clause 6.6.3 of ASTM F1743 for pull-in installations, and/or Clause 6.6.3 or 6.7.3 of ASTM F2019 for steam and UV curing methods, respectively. Curing protocols will provide specific direction on:

        (1) Recognized temperature for exothermic reaction

        (2) Curing times or in the case of UV light cures, rate of travel of the ultraviolet light train assembly, pressures, temperature of the liner, and the amount and power of the lamps in operation

        (3) Length of time to full cure after exotherm has occurred and recommended adjustments to curing time for complex heat sink or temperature variations that may occur during the curing period.

        (4) Cool down rates for hot water and steam cure methods.

    b. Curing temperatures

    c. Inversion and cure pressures (minimum and maximum)

    d. Rate of travel of the UV light train and amount of lamps in operation in the case of UV cures.

6. Provide the maximum allowable axial and longitudinal tensile stress for the fabric tube and the arrangement for monitoring pull-in forces during installation if liner insertion is to be by pull-in methods.

7. Number and location of heat source monitor gauges.

8. Number and location of thermistors to be used for monitoring the temperature of the liner during the curing process.

9. Estimated length of time required to reinstate the main line sewer and sewer services.

10. Method of styrene management to be employed.

11. Submission Requirements:

a. Tabular installation protocols showing multiple installations are acceptable for all small diameter liners (considered 18 inches in diameter and smaller), provided they meet all other requirements outlined herein.

b. Installation protocols for all large diameter sewers (considered greater than 18 inches in diameter) shall be submitted as individual submissions.

F. Submit a CIPP sampling protocol that provides the following:

1. Detailed procedure for preparing plate samples, including a sample plate sample preparation quality control form. The Contractor shall provide a filled out plate sample preparation form for each plate sample provided, signed off by the wet out supervisor and project manager affirming the correct preparation of the samples. The form shall include the dimensions of the sample, direction of the circumferential fibers, and date of preparation, location of preparation.

2. Sampling procedures for plate samples, confined pipe samples.

3. Description of confined pipe forms to be utilized.

4. Procedure, complete with diagram for placement of heat sink (sand bags) for confined pipe samples.

5. Sizes for all samples to be obtained.

6. Liner repair products and procedures for direct cut samples.

G. Submit chemical resistance results for each proposed Liner System.

H. Submit third liner third party testing results. Third party test results that do not implicitly indicate the resin and tube name on the actual laboratory report shall be supported by the following backup documentation:

1. A certificate of compliance signed by a representative of the Supplier and a public notary indicating the resin and tube name tested on said reports, or

2. Copies of the appropriate contract specifications or approved shop drawings clearly indicating the resin and tube used on and subsequently tested and reported on said reports.

1.06 DESIGN OF CIPP LINERS:

A. Design Objectives

1. Maximizing the structural enhancement of the sewer by installing a close-fit CIPP.

2. Maximize the internal diameter of the rehabilitated sewer with as little impact on the hydraulic capacity of the sewer as possible.

3. Reducing infiltration and exfiltration.

4. Preventing root intrusion.

5. Providing sufficient chemical resistance to prevent further sewer pipe degradation related to the conveyance of sewage.

6. Minimizing sewer service disruption during rehabilitation.

7. Minimizing the time required to complete the sewer rehabilitation.

8. Minimizing disturbance to pavements and boulevards.

9. Minimizing disruption to vehicular and pedestrian traffic.

10. Minimizing the impact of construction on commercial, industrial, and institutional facilities.

11. Select a CIPP product and construction approach for rehabilitation with the intent towards maximizing the achievement of these design objectives.

12. Additional design objectives for internal point repair CIPP include.

    a. Providing a smooth transition between the internal point repair CIPP and the host pipe to prevent the build-up of solids and minimize wear on the repair due to routine sewer cleaning and other maintenance activities.

    b. Filling any existing voids outside the sewer at the point of repair

B. General

1. Chemical and mechanical properties of the liner based on the waste stream to establish and minimum design life of 50 years.

2. Size CIPP in accordance with the design objectives to provide a close-fit to the host pipe with no annulus except for the maximum allowable diametric shrinkage due to curing permitted in ASTM D5813.

3. Design features of internal point repair CIPP shall include:

    a. Design internal point repair CIPP as a gravity pipe in a fully deteriorated pipe condition and the depth of cover calculated based on the specific location of the repair in the sewer or sewer service.

    b. Tapered end sections to promote a smooth transition from the repair to the host pipe.

    c. A means to facilitate flow through by-pass of existing dry weather flow during the course of the repair.

4. Long-term values for flexural modulus of elasticity and flexural strength will be considered to be the projected value at 50 years of a continuous application of the design load based on the specific resin and felt composite as established by ASTM D2990 (or equivalent ISO or otherwise accepted testing method) based on an applied stress level of 25% of the yield strength of the liner and approved for use in the pre-qualification process. A minimum test length of 10,000 hrs is required. The Contractor shall provide supporting long term test data conforming to ASTM D2990 for any resin and felt composites not approved for use in the prequalification process.

5. The Contractor shall also provide short term test data on the modulus of elasticity and flexural strength of the in place composite structure conforming to ASTM D790 for any resin and felt composites proposed for use on the project.

C. Minimum Loading Assumptions:

1. Unless otherwise specified, the groundwater table shall be assumed to be at ground surface.

2. Calculate soil loads based on saturated soil unit weight of 120 pound per cubic feet.

3. Design calculations shall consider both maximum and minimum soil cover scenarios for each liner. The governing load case shall govern the design.

4. The following live loads shall be included in the design:

a. Sewers crossing beneath rail lines: Where identified, applied soil pressures from a Cooper E80 rail load shall be estimated and utilized in the design of the CIPP liner. Rail loads shall include a track allowance dead load of 200 lb/ft. Applied rail loads at depth shall be calculated using the Boussinesq solution for distribution of soil stresses from surface point loads. Impact factors for rail loads shall be calculated in accordance with the AREMA Manual for Railway Engineering.

b. All other sewers: The applied soil pressures from an AASHTO HS 25 design truck unless a higher or lower value is indicated in the contract specifications shall be estimated and utilized in the design of the CIPP liner. Applied soil pressures from AASHTO design truck loads shall be estimated in accordance with AASHTO LRFD Bridge Design Specifications, Seventh Edition (2014).

5. Unless otherwise specified, applied soil pressures at depth caused by superimposed surface loads shall be calculated using the Boussinesq solution for distribution of stresses from surface point loads.

D. Hydraulic Design Checks

1. Perform a design check to confirm that the full flow hydraulic capacity of the CIPP will be equal to or greater than the existing sewer. Use "Manning's" formula with assumed 'n' value of 0.012 for the CIPP and 0.015 for the existing sewer. Report any sewers showing a decrease in post lining flow capacity from existing conditions.

E. Circular CIPP Design – Minimum Design Assumptions

1. Designed in accordance with ASTM F1216 Appendix X1 assuming a fully deteriorated design condition.

2. An enhancement factor (K) of 7, assuming a close fit with the host pipe.

3. Minimum factor of safety (N) of 2 for restrained buckling analysis.

4. Modulus of soil reaction (E's) will be assumed to be 700 psi unless for sewers with depth to inverts of less than 10 feet, and 1,000 psi for 10 feet or greater.

5. The following minimum values for ovality of the existing sewer shall be used unless otherwise specified or as determined from observation of the maintenance inspection:

a. Partially deteriorated design – 3%

b. Fully deteriorated design – 2%

F. The Contractor shall confirm the design conditions stipulated with the design equations and advise the Engineer of any conditions more adverse than those identified with the designs. If field conditions are found to be more adverse than those identified with the designs the Engineer (designer) will provide new design curves for the design conditions measured on site. Increases to the liner thickness based on the discovery of more adverse design conditions will be considered a Change in Work as defined by the General Conditions.

G. Existing Sewer Design Conditions

1. The assessment of the liner system design conditions and site-specific repairs required to accommodate lining were based on the conditions observed from sewer inspections. Copies of these video inspections are available to the Contractor upon request to the Engineer.

2. The specific design conditions applicable to each CIPP lining location will be fully deteriorated for all liners.

1.07 WARRANTY

A. A Warranty period of CIPP work will be 1 year from the date of installation but no earlier than the completion date of satisfactory warranty CCTV inspections (if

performed) and resolution of issues discovered during the warranty CCTV. Certification of acceptance of the Work will not, however, relieve the Contractor from his or her responsibilities for any breach of the Contract including, but not limited to, defective or deficient Work appearing after the date of such certification.

B. All defects found by Warranty Inspection will be rectified at the Contractor's expense within 90 days of discovery. A repair proposal with adequate supporting documents showing that the repair will fully reinstate the structural integrity of the CIPP lining will be submitted by the Contractor to the Engineer for review and approval prior to starting the repair of any found defects.

C. Once the repair has been installed by the Contractor, the sewer will have its warranty period extended one year from the date the repair was accepted by the Engineer. The Contractor will re-inspect the pipe again prior to the expiration of it's warranty period in accordance with Section 33 01 30.16 at no additional cost to the Owner.

D. The Owner may perform warranty inspections with its own personnel or personnel independent of the installation Contractor.

PART 2 - PRODUCTS

2.01 CIPP MATERIALS REQUIREMENTS

A. Non-Reinforced CIPP Products

1. Non-Reinforced CIPP products shall conform to the requirements of ASTM F1216 and D5813.

B. Reinforced CIPP Products

1. Reinforced CIPP products shall conform to the requirements of ASTM F2019 and D5813. Notwithstanding ASTM F2019, the fabric tube may be reinforced with either glass or carbon fibers, as required to achieve the desired short and long term material properties and may be installed via inversion methods. The materials of the Liner System, Tube and Resin, shall comply with the requirements of ASTM D5813 Sections 5, 6, 7, and 8, unless noted otherwise.

C. If a calibration hose is used for inflation of the Liner System, it shall comply with the requirements of ASTM F1743 or ASTM F2019.

D. Prior to construction, the Resin manufacturer shall be required to submit a resin sample for infrared analysis. The infrared spectrum generated from this sample may be compared to the spectrum obtained from samples of the actual Resin used to wet-out the liner at the Engineer's discretion.

E. The minimum structural properties of the Liner System shall satisfy the requirements of Table 1 as per ASTM F1216, or

F. Table 2 as per ASTM F2019.

Table 1: Minimum Properties as per ASTM F1216

Component	Structural Property	Minimum Value (MPa)	Minimum Value (PSI)
Tube	Tensile Strength	21	3,000
Liner System	Flexural Strength	31	4,500
Liner System	Flexural Modulus	1724	250,000

Table 2: Minimum Properties as per ASTM F2019

Component	Structural Property	Minimum Value (MPa)	Minimum Value (PSI)
Tube	Tensile Strength	Declared value	Declared value
Liner System	Flexural Strength	103	15,000
Liner System	Flexural Modulus	5000	725,000

G. Verification of structural properties to be used in design shall be made by attaching relevant third party test results. Reports verifying structural properties shall conform to the requirements of Table 3. Flexural strength, tensile strength, and flexural modulus values shall be based on field test results attained by the Contractor with the specific liner system, tube, and resin proposed for use on this project.

H. Type testing by the manufacturer of the resin system shall not be used to support design values for short term strength and stiffness, only results from field sampling on previous representative projects.

Table 3: Reference Standard for Structural Property Verification

Structural Property	Applicable Standard	Report Requirements
Tensile Strength (Tube)	ASTM D638	Section 12 of ASTM D638
Flexural Strength and Flexural Modulus (Liner System)	ASTM D790	Section 13 of ASTM D790 (as modified in Appendix X2 of ASTM F2019 for UV)
Long Term Flexural Creep Modulus (Liner System)	ASTM D2990	Section 13 of ASTM D2990 (as modified in Appendix X3 of ASTM

			F2019 for UV)
Tube	Tensile Strength	Declared value	Declared value
Liner System	Flexural Strength	103	15,000
Liner System	Flexural Modulus	5000	725,000

2.02 CIPP END SEAL

A. Sika Hydrotite

B. Or approved equal

PART 3 - EXECUTION

3.01 VERIFICATION OF EXISTING SEWER DIMENSIONS

A. Verify dimensional requirements of each sewer to be rehabilitated prior to design and manufacture of the CIPP tube in accordance with 33 01 30.16.

3.02 FLOW CONTROL

A. The Contractor shall ensure wet weather or excessive flow conditions can be pumped or otherwise accommodated through the work area. The Contractor shall schedule work requiring complete blockage of the sewer when the chances of wet weather events are minimized in accordance with 3.02.B.

B. Weather

1. Review the weather forecast with the Engineer before each day of liner installation.

2. Delay installation of liners when the anticipated weather conditions are such that anticipated sewer flow will exceed the flow control measures provided.

3. The Contractor shall advise immediately of any weather-related delays.

4. The Contractor to schedule Work according to the weather; The City is not responsible for costs associated with weather related delays or damage.

C. All flow control shall be in accordance with 33 34 35.

3.03 SEWER CLEANING

A. Remove loose debris, solid debris, roots, and grease in accordance with 33 01 30.14 and 33 01 39.02 in order to adequately prepare the sewer for lining.

3.04 SEWER PREPARATION AND REPAIRS PRIOR TO LINING

A. Perform sewer preparation and repairs as indicated in the Specifications and drawings.

B. Complete the internal host pipe repairs indicated in the Rehabilitation Table.

C. Line Obstructions - Clear the sewer of obstructions, including but not limited to debris, deposits, grease, roots, and protruding laterals, that will interfere with the installation and long-term performance of the liner.

3.05 CONTINUOUS TEMPERATURE MONITORING

A. Where specified, the Contractor shall install the CIPP liners complete with a fiber optic thermal sensing cable (to be left in place) that is capable of continuously monitor curing temperatures along the entire length of CIPP liner. The cable and recording equipment shall be capable of temperature readings every 18 inches in real time. Curing data logs shall be submitted to the Engineer with the Quality Control records.

B. Continuous temperature monitoring shall be utilized on the following installations:

1. Air/steam installations 36 inches and greater in diameter (or internal height);

2. water installations 48 inches and greater in diameter (or internal height); and/or

3. as specified in 3.13 and/or on the drawings.

3.06 INSTALLATION OF CIPP

A. Notify residents before CIPP installation in accordance with 01 11 00 Summary of Work.

B. Before installation of CIPP, install hydrophilic end seals at all upstream and downstream connections at manholes to be lined.

C. Install liners by inversion methods in accordance with ASTM F1216 or by pull-in methods in accordance with ASTM F1743 or ASTM F2019.

D. Full segment and partial full segment CIPP shall be cured by hot water, steam, or UV light sources.

E. Carry out workmanship in accordance with ASTM D5813.

F. Trim ends of CIPP neatly to fit flush with interior vertical surface and manhole benching and seal to make watertight.

G. Fill annular spaces where the CIPP does not make an adequate seal with the host pipe at manholes, termination points and sewer services due to broken or misaligned pipe with a resin-rich mixture compatible with the CIPP.

H. Extend limits for internal point repairs a minimum of 12 inches in each direction beyond the limits of the defect to be repaired. Extend internal point repairs that terminate at sewer service services a minimum distance of 12 inches beyond the limit of the service.

I. Ensure termination points of internal point repairs provide a smooth and uniform flow transition to the host pipe for the full circumference of the repair.

J. The finished liner shall be continuous between manholes and shall be free from visual defects such as foreign inclusions, reverse curvatures, flats, dry spots, pinholes, and delamination. Visual inspection shall be accomplished by review of post construction CCTV. Should defects occur, the entire liner between manholes shall be removed and replaced at no cost to the Owner.

K. Refer to 3.13 for additional site specific installation conditions.

3.07 REINSTATEMENT OF SEWER SERVICES

A. Reinstate all active and unable to determine sewer services including CB leads and utility drains to 100% of the original cross sectional area.

B. Cut out openings for sewer services from inside the lined sewer by manual means or with a television camera and a remote controlled cutting device.

C. Remove sharp edges from opening cut outs and provide a smooth rounded lip.

D. Sewer Service Grouting

1. Sewer service grouting may be required if visible voiding is present at the service during the review of Post Lining Video Inspection.

2. Complete sewer service grouting in accordance with 33 01 39.02.

E. The Contractor shall immediately reinstate sewer services upon finished curing of the liner and not leave site until each service on the line is reinstated.

F. Contractor shall repair any damage caused by the Contractor’s work to the satisfactory of the engineer at their expense.

3.08 ANNULUS GROUTING

A. Complete annulus grouting in accordance with 33 01 39.02 where identified by the Engineer during the Post Lining Video inspection.

B. Complete annulus grouting where identified by the Engineer during the Post Lining Video inspection.

1. Complete annulus grouting where voids are evident between the liner and the host pipe.

2. Annulus grouting post lining shall be completed using an appropriate cementitious or polyurethane grouting system that is compatible with the liner system.

3. A cementitious grout shall be used were grouting is required to achieve long term structural performance of the liner and host pipe. In all other applications, a polyurethane grout may be used to fill voids between the liner and host pipe.

4. Cementitious grout shall be one part Type GU/GUL cement and one part sand with sufficient water to produce a stiff mortar-like consistency capable of developing a 2,900 psi compressive strength after 28 days.

5. The Contractor shall ensure short term buckling pressures of the installed liner are not exceeded during the grouting process.

6. A detailed grouting plan shall be submitted for all grouting operations, including the following:

   a. Proposed grouting material complete with physical characteristics.

   b. Grouting procedure complete with estimated grouting pressures.

   c. Allowable grouting pressure base on buckling capacity of the installed liner.

3.09 STYRENE MANAGEMENT

A. Under no circumstances shall cure water or condensate containing styrene be discharged into a storm sewer or any other direct connection to surficial drainage courses or facilities.

B. The Contractor shall develop and implement a styrene management plan for each site that could reasonably be impacted by planned or inadvertent discharge of styrene into the environment via overflows or the land drainage system, based on the site specific conditions for the CIPP installation and boundary conditions at that site.

C. The Contractor shall submit styrene management plan(s) for each identified site at the request of the Engineer, or a minimum of five (5) days prior to lining.

D. The Contractor's styrene management plan shall include one or more of the following methods of control:

   1. Use of styrene free resins;

   2. Use of on-site treatment systems where hot water curing methods are utilized;

   3. 100% condensate capture and off-site disposal to the WWS system;

   4. On-site monitoring to verify no residual styrene is discharged to the environment where UV curing methods are used.

E. All styrene management plans shall include sufficient details on:

1. Regulatory compliance considerations for discharge based on the Contractor's proposed resin selection, curing method, and discharge location for steam condensate or cure water, first flush, etc.

2. The means, methods, and techniques employed to mitigate styrene levels to within acceptable limits for the site specific application, including:

a. Resin selection to eliminate or mitigate styrene levels;

b. Cure considerations to mitigate excessive styrene volatilization;

c. Handling considerations, post cure to mitigate levels discharged to aquatic or other environments that may be deleteriously impacted by excessive styrene levels.

F. The Contractor shall be responsible to undertake sufficient monitoring to confirm and demonstrate that discharge levels are consistent with the styrene management plan's stated discharge limit objectives. Provide a report on styrene monitoring results upon completion of liner installation.

3.10 QUALITY CONTROL RECORDS

A. Maintain the following Quality Control records of the work and provide to the Engineer after completion of the work.

1. Summary of the resin impregnation process including:

a. Volume of resin supplied.

b. Excess quantity of resin added during the wet out to account for polymerization and migration into the host pipe.

c. Roller gap setting.

d. Resin catalyst(s) used.

e. Time and location of the wet out.

f. Means taken to store and transport the resin impregnated CIPP from the wet out facility to the job site.

2. Means of curing liners.

3. Continuous log of pressure maintained in the liner during the curing period.

4. Pulling force used to pull or winch CIPP into place in the host sewer and measured liner elongation.

5. Continuous log of temperature at boiler in and out and at all thermistors placed between the host pipe and the liner at all manholes during the initial cure, cure, and cool down periods.

6. For UV cures, monitoring shall also include the rate of travel of the UV assembly and the amount of lamps in operation during the curing process.

7. Continuous temperature monitoring logs.

3.11 CIPP SAMPLES FOR QUALITY ASSURANCE PURPOSES

A. General:

1. The Contractor shall provide the following samples from each CIPP liner:

a. Confined test sample in accordance with 3.11.B.

b. Plate sample in accordance with 3.11.C.

2. If it can be demonstrated that it is impractical to obtain confined test samples due to CIPP size and/or site specific conditions then results from test plate sample results modified in accordance with Section 77-4.01D(2)(c), item 3 of this specification will be used to confirm flexural strength and flexural modulus.

3. Schedule the installation of liners for which confined pipe samples are impractical to obtain after a minimum of three (3) previous CIPP linings on the same project have been completed and confined pipe and test plate samples have been secured to provide collaborative testing. The Contractor will coordinate and pay for CIPP sample testing to confirm the CIPP flexural strength, flexural modulus and thickness in accordance with the requirements of ASTM D5813, D790, and ASTM D3567.

4. The Engineer will review CIPP liner thickness results taken from test plates or unconfined samples on a case-by-case basis.

5. All samples shall be labeled as follows:

a. Asset number

b. Date of installation

c. Street name

B. Confined Test Samples

1. Where possible, use confined test sample methods to assess site-specific compliance requirements. Confined test sampling will be carried out, where possible, in accordance with Clause 8.1.1 of ASTM F1216 and as follows:

a. Provide necessary forms of the same diameter as the host pipe and secure a minimum 8” (200 mm) long full diameter confined test sample from each CIPP.

b. Locate the test sample from in an intermediate manhole or at a termination point and invert through the form.

c. Cut the CIPP sample to coincide with multi-piece form if used for CIPP larger than 18 inches (450 mm) in diameter to facilitate removal from the manhole.

2. The Contractor will coordinate and pay for CIPP sample testing to confirm the CIPP flexural strength, flexural modulus, and thickness in accordance with the requirements of ASTM D5813, D790, and ASTM D3567.

3. If it can be demonstrated that it is impractical to obtain confined test samples or other installed test samples due to CIPP size and site-specific conditions, then results from test plate samples will be used to confirm flexural strength and flexural modulus.

C. Test Plate Samples

1. Prepare test plate samples for each and every CIPP installation.

2. Prepare test plate samples in accordance with Clause 8.1.2 of ASTM F1216 and as follows from the actual CIPP and cure in the following manner:

a. In a clamped mold placed in the downtube or manhole for water-cured liners.

b. In a clamped mold placed in a container filled with uniformly distributed steam from the installation manhole for steam-cured liners.

c. As per ASTM F2019 for UV cured liners.

3. The Contractor will coordinate and pay for test plate sample testing to confirm the flexural strength, flexural modulus, and thickness in accordance with the requirements of ASTM D5813, D790, and D3567 in all instances where confined or other sampling techniques cannot be utilized. In instances where confined or other sampling techniques are not conclusive, test plate samples may be utilized to reconcile designs at the Contractor’s expense.

3.12 POST CONSTRUCTION DESIGN REVIEW FOR TOTAL PERFORMANCE

A. The Engineer will perform a post-construction design review to confirm that the completed CIPP meets the 50 year design life structural requirements prior to issuance of Total Performance. The design review will utilize the measured values for flexural strength, flexural modulus, and CIPP thickness from the confined pipe sample testing,

directly obtained samples, or the reduced strength/modulus values obtained from the test plate testing in circumstances where confined pipe samples are not able to be secured.

B. CIPP strength values will be further reduced to account for creep based on the creep reduction values identified during the CIPP design process to assess the suitability of the liner to meet the 50 year design life requirement. The use of full enhancement factors in this analysis will be limited to liners that are confirmed by visual classification to be close-fit liners based on the post-lining sewer inspection.

C. The Engineer will advise of any discrepancies between the constructed CIPP and the design requirements.

1. Deficiencies in the physical testing results for CIPP liners will be reviewed by the Engineer. The Engineer will undertake efforts to reconcile the design based on the physical test results for the deficient liner, and accounting for the verified condition of the host pipe prior to lining, the CIPP installation conditions, and the long-term use of the sewer to assess whether the installed CIPP meets the specified design objective.

2. Defects in CIPP liners will be reviewed on a case by case basis by the Engineer. The Engineer will consult with the Contractor and taking into account the condition of the host pipe prior to lining, the CIPP installation conditions, and the long term use of the sewer to assess the structural and performance ramifications of the defects.

D. The Contractor shall:

1. Perform necessary remedial measures to confirm that a CIPP deemed as structurally deficient will comply with the 50 year design life requirement such as confirmation of actual ovality, determination of a more representative groundwater elevation locally through monitoring, and supplemental strength testing and thickness measurements.

2. Repair sections of CIPP removed for supplemental testing by placing a full circumference internal point repair of the same thickness as the full segment liner over and extending 12 inches beyond each side of the cut section.

3. Install a supplemental CIPP of the required thickness to structurally enhance the installed CIPP if supplemental testing fails to confirm the CIPP will meet the design life of 50 years.

4. Review remedial action with the Engineer prior to implementation.

5. Perform further testing, monitoring and calculations and install structural enhancements at own cost.

3.13 SITE SPECIFIC DESIGN AND INSTALLATION CONSIDERATIONS

A. As noted on the Rehabilitation Table.

END OF SECTION

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SECTION 33 01 40.01

MANHOLE REHABILITATION

PART 1 - GENERAL

1.01 GENERAL:

A. These Specifications include the minimum requirements for the rehabilitation of manholes as shown on the plans included as part of these contract documents.

B. The manhole SYSTEM's installed shall cause no adverse effects to any of the Owner's processes or facilities either during or after application. The use of the product, by the Contractor, shall not result in the formation or production of any detrimental compounds or by-products at the wastewater treatment plant. The Contractor shall notify the Owner and identify any by-products produced as a result of the installation operations, test and monitor the levels, and comply with any and all local waste discharge requirements. The Contractor shall cleanup, restore existing surface conditions and structures, and repair any of the manhole SYSTEM's installed and determined to be defective. The Contractor shall conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, businesses, and property owners or tenants.

C. The manhole SYSTEM shall be a lining system intended for installation in sanitary manholes.

1.02 DESCRIPTION OF WORK AND PRODUCT DELIVERY:

A. The SYSTEMs furnished shall be complete integrated and compatible systems including all materials, manufacturer's recommended equipment and manufacturer's installation procedures. The SYSTEM **shall completely cover every manhole component including but not limited to the channel, bench, walls, chimney and frame areas.**

B. The SYSTEMs installed shall be free of all defects that will affect the design and service life and operation of the manhole.

C. The SYSTEM installed shall eliminate water leakage into the manhole and prevent water or vapors to leak out of the manhole through pin-holes or other defects. If leakage occurs either in or out of the manhole the Contractor shall seal these areas to stop all leakage using a material compatible with the SYSTEM applied and as specified by the manufacturer. If leakage occurs through any SYSTEM applied to the manhole, the SYSTEM shall be repaired or removed as recommended by the manufacturer. All repair materials shall have the same estimated life expectancy than the SYSTEM installed. Final approval of the SYSTEM installation will be based on meeting the acceptance test requirements for each SYSTEM applied/installed.

D. The SYSTEM (applied to the intended structure) shall be designed against corrosion, typical chemicals found in domestic sewage. The manufacturer of the SYSTEM shall provide testing data that supports their SYSTEM's design and service life.

E. All manhole steps shall be removed and properly disposed of prior to a coating or lining application.

F. Flow from existing active service connections entering the manhole shall be maintained or bypassed if the flow will affect proper SYSTEM application/installation.

G. All component materials furnished, as part of this contract shall be marked with detailed product information, stored in a manner specified by the manufacturer and tested to the requirements of this contract.

H. All testing shall be executed by Contractor in the presence of The Engineer. Warranty inspections shall be executed by the Engineer or its representative. Any defects found shall be repaired or replaced by the Contractor.

1.03 SUBMITTALS:

A. Product data submittals required for all rehabilitation SYSTEMs proposed for installation under this contract shall include:

1. SYSTEM material type and manufacturer to be used including: catalog data sheets, ASTM references, material composition, manufacturers recommended specifications, component physical properties and chemical resistance. (PWS)

2. Manufacturer's detailed description of the recommended procedures for handling and storing materials including a proposed method for monitoring temperatures of the storage location, if applicable to the specific SYSTEM material. (PWS)

3. Manufacturers detailed description of the recommended material installation/application process including mixing, additives, set time, cure time (return to service) and all equipment required for quality product delivery. (PWS)

4. Technical data sheet describing each rehabilitation component to be applied / installed, stating the expected longevity of the component in a wastewater environment. Data shall be based on independent third party tests. (PWS)

5. Manufacturer's detailed description of all required field testing processes and procedures. (PWS)

6. Copies of independent testing performed on the rehabilitation component, indicating that the product meets the requirements as specified in these Contract Documents and the manufacturers design. (PWS)

7. Technical data sheet and project specific data for manhole repair materials to be used in conjunction with each rehabilitation component(s) including application cure time and surface preparation procedures. (PWS)

8. Certification that backup installation equipment is available on the job site or can be delivered to the job site by the morning of the next business day. (PWS)

9. Shipping information including: (Jobsite)

    a. Shipped item, including manufacturer, stock and lot number

    b. Date shipped including origination and delivery locations

    c. Shipping method and carrier

    d. All shipping, storage and safety requirements including MSDS documents.

    e. Date delivered to project site including name and signature of receiver

10. Certified statement, from the manufacturer, that the Contractor/installer is an approved installer of the SYSTEM with certificates of completed training for each crew member involved in each rehabilitation component. This requirement shall comply with the specific SYSTEM requirements specified in the Contract Documents. (PWS)

11. For each manhole rehabilitation, a complete and accurate record of all SYSTEMs installed/applied shall be prepared by the Contractor. The record shall include identifying manhole number, location, quantities of rehabilitation components installed.

12. Submittal of all quality assurance documentation and test reports for SYSTEMs installed. (After Rehabilitation Completion)

1.04 QUALITY CONTROL PLAN (QCP)

A. A detailed quality assurance plan (QCP) shall be submitted to The Engineer that fully represents and conforms to the quality control requirements of these specifications. At a minimum the QCP shall include the following:

B. A detailed description of the proposed quality controls to be performed by the Contractor.

C. Defined responsibilities, of each of the Contractor's personnel, for assuring that all quality control requirements, for this contract, are met. These shall be assigned, by the Contractor, to his specific personnel.

D. Proposed procedures for quality control, product sampling and testing shall be defined.

E. Proposed methods for product performance controls, including method of and frequency of product sampling and testing both in raw material form and cured product form as applicable.

F. A scheduled performance and product test result reviews between the Contractor and the Engineer at a scheduled job meeting.

G. Inspection forms and guidelines for quality control inspections shall be prepared in accordance with the standards specified in this contract and submitted with the QCP.

H. Proposed methods and procedures for SYSTEM repair or replacement, in the event of product defects or total failure.

1.05 SYSTEM REPAIR/REPLACEMENT

A. Due to mechanical damage or defects in application, SYSTEM's will occasionally need to be repaired or replace a portion of the installed product. The Manufacturer shall outline specific repair or replacement procedures for potential issues that may occur during the application of the SYSTEM. Repair/replacement procedures shall be as recommended by the SYSTEM Manufacturer and shall be submitted as part of the PWS.

B. Issues, that may not affect the operation and long term life of the product, shall be identified and defined by the Manufacturer.

C. Repairable issues that may occur in the SYSTEM shall be specifically based on Manufacturer's recommendations, including a detailed step-by-step repair procedure, resulting in a finished product meeting the estimated life cycle of the component and requirements of these contract specifications.

D. Un-repairable issues that may occur in the SYSTEM shall be clearly defined based on the Manufacturer's recommendations. The Contractor together with the manufacturer shall define the best recommended procedure for the total removal and replacement of the SYSTEM.

E. The Contractor shall receive no additional compensation for the repair or replacement of SYSTEMs deemed non-conforming to the requirements of these Contract Documents and unacceptable by The Engineer.

1.06 QUALIFICATIONS:

A. Current documentation, from the SYSTEM product manufacturer, certifying that the Contractor's training, the Contractor's personnel and equipment comply completely with their product Quality Assurance requirements.

B. For a manhole coating or lining product to be considered for this project, a minimum of 500 vertical feet of documented manhole rehabilitation must have been completed by the Contractor in the previous three (3) year period.

C. For all SYSTEM products, to be considered for this project, a minimum of a three (3) year successful installation history must be documented.

D. In all cases a minimum of three (3) recent verifiable references of the Contractor's work is required, indicating the successful application of the SYSTEM products of the same material type as specified herein or to be furnished by the Contractor and applied in a similar project environment as included in these contract specifications.

1.07 STORAGE AND HANDLING:

A. Rehabilitation component materials are to be kept dry, protected from weather and stored under cover and in accordance with manufacturer's recommendations.

B. Polymer and Cementitious protective coating materials are to be stored at temperatures as recommended by the manufacturer and handled according to their material safety data sheets. Do not store near flame, heat or strong oxidants.

1.08 SAFETY:

A. The Contractor shall conform to all work safety requirements of pertinent regulatory agencies, and shall secure the site for working conditions in compliance with the same. The Contractor shall erect such signs and other devices as are necessary for the safety of the work site.

B. The Contractor shall perform all of the Work in accordance with applicable OSHA safety standards. Emphasis shall be placed upon the requirements for entering confined spaces and with the equipment being utilized for manhole rehabilitation components. Confined space, defined as any space having one or more of the following characteristics:

1. Limited openings for entry and exit.

2. Unfavorable natural ventilation.

3. Not designed for continuous worker occupancy.

C. The Contractor shall have on the job site at all times at a minimum the following safety equipment:

1. Gas monitor capable of testing and detecting for combustible gas, oxygen deficiency and hydrogen sulfide.

2. Confined space access and retrieval winch system.

3. Ventilating fans with large diameter ventilating hose.

4. Supplied air respirator, MSHA/NIOSH approved type.

5. Safety harness and life lines.

6. Other equipment as may be required for a specific project

D. All entries into or work within confined spaces shall be conducted in accordance with the U.S. Department of Health and Human Services/National Institute for Occupational Safety and Health [DHHS (NIOSH)] Publication No. 87-113, A Guide to Safety in Confined Spaces.

E. The Contractor shall submit a proposed Safety Plan to the Owner, as part of the PWS and prior to beginning any work, identifying all competent persons, equipment and operating procedures. The plan shall include a description of a daily safety program and daily safety meeting for the job site and all emergency procedures to be implemented in the event of a safety incident. All work shall be conducted in accordance with the Contractor's submitted Safety Plan.

1.09 SYSTEM DESIGN

A. The design of the system shall be in accordance with ASCE MOP 92 designed as a fully structural lining system designed for the following loads:

1. External Hydrostatic Stress at ground surface.

2. HS-20 live loading

B. The minimum thickness for cementitious liners shall be 0.75 inches.

C. The minimum thickness for polyurethane liners shall be 275 mils.

D. Composite cementitious and epoxy systems shall be a minimum thickness 1" cementitious and 125 mils epoxy.

1.10 WARRANTY

A. The materials used for the project shall be certified by the manufacturer for the specified purpose. The manufacturer shall warrant the SYSTEM to be free from defects in raw materials for one (1) year after installation or from the date of acceptance by the Engineer, whichever is later. The Contractor shall warrant the installation of the rehabilitation component for a period of one (1) year. During the one (1) year warranty period if the rehabilitation component, fails, delaminates, peels or shows any defect, which may materially affect the integrity, strength, function and/or operation of the manhole structure, it shall be immediately repaired at the Contractor's expense in accordance with per the liner manufacturer's recommendations.

B. After a manhole has been renewed and for a period of time up to one (1) year following completion and final acceptance of the project, Owner may inspect all or portions of the renewed manholes. The specific locations will be selected at random by the Owner and will include all types of structures from this project.

C. If any of the rehabilitation components have developed defects since the time of "Quality Assurance And Testing," the defects shall be repaired and/or the component shall be replaced as defined in Section 1.05 Rehabilitation Component System (SYSTEM) Repair/Replacement. Engineer may inspect all manholes where SYSTEMs have been applied/installed under this contract.

D. All verified defects shall be repaired and/or replaced by the Contractor and shall be performed in accordance with Section 1.06 and per the original specifications, all at no additional cost to the Owner.

1.11 WARRANTY INSPECTIONS:

A. Visual inspection to determine integrity of SYSTEM materials and water-tightness will be conducted within 3 months before the expiration of the guarantee period.

B. If possible, inspection should be performed in the spring during high groundwater and frequent rainfall events.

C. The Owner may perform warranty inspections with its own personnel or personnel independent of the installation Contractor.

D. No infiltration or inflow shall be visible in the renewed manhole.

E. If any SYSTEM fails the warranty inspection, the Owner may inspect all SYSTEMs installed under the Contract, together with Contractor at no additional cost.

PART 2 - PRODUCTS

2.01 CHEMICAL GROUTS:

A. Chemical Grout Types:

1. The Contractor shall specifically define the type of chemical grout that will be furnished for the project. Depending on the specific application either Acrylic or Acrylate Based Grout or Urethane Based Grout shall be furnished. The type of grout to be used shall be in accordance with the manufacturer’s recommendation for the specific application of the project.

2. Contractor shall deliver materials to job site in undamaged, unopened containers bearing manufacturer's original labels. Materials used as chemical grout shall be transported, stored, mixed and applied in manner prescribed by the manufacturer of the specified materials, as detailed in published data provided by manufacturer.

B. Materials:

1. Contractor shall provide a chemical sealant solution containing principal chemical sealant constituent, initiator (trigger) and catalyst specifically recommended for the

purpose of sealing leaks in manholes. Chemical sealant constituent, initiator (trigger) and catalyst shall be compatible when mixed. Solution shall have ability to tolerate dilution and react in moving water. After final reaction, it shall be a stiff, impermeable, yet flexible gel. The grout proportions shall be such that dilute aqueous solutions, when properly catalyzed will form stiff gels. Materials provided shall gel in a predetermined time period when exposed to normal groundwater pH ranges, and be capable of formula adjustments to compensate for changing conditions. Final reaction shall produce a continuous, irreversible, impermeable stiff Gel and shall not be rigid or brittle.

2. The grout shall exhibit the following properties:

   a. Controllable reaction times and shrinkage through the use of chemicals supplied by the same manufacturer. The minimum set time shall be established so that adequate grout travel is achieved.

   b. Resistance to chemicals, to most organic solvents, mild acids and alkali.

   c. The grout shall be non-toxic in its cured form.

   d. Sealing material shall not become rigid or brittle when subjected to a dry environment. The material shall be able to withstand freeze/thaw and moving load conditions as verified by third party testing.

3. The Contractor shall identify the type of grout and additives used on the contract and furnish references of successful use in similar applications. The Contractor shall select the choice of materials based on chemical and physical properties and expected performance for the requirements of the Contract Documents.

4. Grout conditions may be adjusted for catalyzing the reaction, inhibiting the reaction, lowering the freezing temperature the grout solution, adding fillers, providing strength or for inhibiting root growth according to the instructions of the grout manufacturer and in the specified quantities as recommended by the grout manufacturer.

C. Mixing & Handling:

1. Mixing and handling of chemical grout, which may be toxic under certain conditions, shall be done in such a manner as to minimize any hazard to personnel and shall be in accordance with the manufacturer's recommendations. It is the responsibility of the Contractor to provide appropriate protective measures to ensure that chemicals are handled only by trained and authorized personnel. All equipment used to install the grout shall be as recommended by the manufacturer and only personnel thoroughly familiar with all aspects of the grouting material and meeting the qualification requirements specified herein, shall perform the actual grouting operation.

2.02 CEMENTIOUS LINING PRODUCTS

A. Products

1. Geopolymer:

a. GeoKrete® by Vortex Companies

b. GeoSpray® by Geo Tree Solutions

c. Or approved equal.

2. Calcium Aluminate

a. Mainstay ML-CA by Madewell

b. Or approved equal

B. Liner Minimum Requirements:

a. Physical Properties

(1) Compressive Strength, 6,500 psi

(2) Freeze-Thaw, No visible damage after 300 cycles

(3) Shrinkage, <0.02%

2.03 CHANNEL LINING MATERIAL FOR CEMENTIOUS LINING SYSTEMS

A. Products:

1. Sikatop 123 as manufactured by Sika USA Inc.

2. Or approved equal.

B. Lining material shall be completed using a polymer concrete grout compatible with the liner.

2.04 COMPOSITE LINING SYSTEMS

A. Portland Cement Underlayment:

1. Products:

a. QM-1s Restore® by Quadex (Vortex Companies)

b. MS-2®A by the Strong Company, Inc.

c. Or approved equal.

2. Liner Minimum Requirements:

a. Portland cement based, single component, high strength, fiber reinforced, shrinkage compensated cement mortar enhanced with a monocrystalline quartz aggregate.

b. Physical Properties

(1) Compressive Strength, 9,000 psi

(2) Freeze-Thaw, No visible damage after 300 cycles

(3) Shrinkage, 0% @ 28 days

B. 100% Solids Epoxy:

1. Products:

a. Structure Guard® by Quadex, LLC (Vortex Companies)

b. Raven 405 by Raven Lining Systems

c. Or approved equal

2. Liner Minimum Requirements:

a. The coating system shall be a spray-applied 100% solids epoxy monolithic surfacing system for use in coating new or existing manholes, wetwells, lift stations, treatment plants, and other structures.

b. Physical Properties:

(1) Compressive Strength, 13,000 psi

(2) Tensile Strength, 8,500 psi

(3) Flexural Strength, 12,000 psi

(4) Minimum corrosion resistance suitable for environments pH of 0.5 or higher.

2.05 POLYURETHANE LINING SYSTEMS

A. Products:

1. Spraywall by Sprayroq

2. Sancon 100 by Sancon Technologies

3. Or approved equal

B. Liner Minimum Requirements:

1. The lining shall be high build, corrosion and abrasion resistant, 100% polyurethane coating. The lining system shall employ a 100% solids epoxy primer capable of bonding to damp concrete.

2. The coating material shall be recommended by the manufacturer to use with the following solutions and substances:

Substance	Concentration
Sulfuric acid	20%
Sodium hydroxide	5%
Ammonium hydroxide	5%
Nitric acid	1%*
Ferric chloride	1%
Soap	0.1%
Detergent (linear alkyl benzyl)	0.1%
Sodium hypochlorite	1%
Bacteriological (BOD)	700 ppm
Petroleum oils and greases	any
Vegetable and animal oils	any
*Volumetric percentages of concentrated chemically pure grade reagents.	

3. The lining shall be colored white or cream. The complete coating shall be impermeable to sewer gases and liquids and shall be nonconductive to bacteria or fungus growth. The lining shall be capable of being repaired at any time during its life with high-build, 100% solids, and hand patching kits.

a. Long Term (50 Years) Physical Properties:

(1) Compressive Strength, 7,250 psi

(2) Tensile Strength, 3,250 psi

(3) Flexural Modulus, 360,000 psi

PART 3 - EXECUTION

3.01 GENERAL:

A. Maintain all flow in the manhole throughout duration of project.

B. Provide 48-hour notice to The Engineer prior to start of work for inspector to review and document materials and equipment to be used, for quality assurance and testing requirements.

C. All manhole steps shall be removed before the liner SYSTEM is installed.

3.02 MANHOLE INSPECTIONS

A. Perform the following manhole inspections in accordance with NASSCO Standard Specifications for Inspection Method and documentation:

1. V1 = Initial Inspection to confirm preparation requirements before work begins. Coded and delivered per Level 2 MACP and full flow control required.

2. V2 = Pre-Lining Inspection after manhole cleaning and preparation. No coding of the submission will be required.

3. V3 = Post-Lining Inspection subsequent to installing the lining SYSTEM and before reinstatement of flows. Coded and delivered per Level 2 MACP.

3.03 INFILTRATION CONTROL

A. The stopping of active infiltration shall be accomplished by using a quick set cementitious material compatible to the liner material being installed or using compatible expansion type grouts

3.04 CHEMICAL GROUT:

A. General:

1. Grouting should only be performed on a structurally sound manhole unless the grout is used to prevent water from entering the manhole during application of a lining or coating system. All structural repairs, adjustments to the frame and cover and installation of grade rings shall be completed prior to beginning the grouting operation. Normal grouting operations shall be performed at the temperatures as recommended by the manufacturer.

B. Chemical Grouting Application:

1. Grouting applications may include sealing a manhole from infiltration/inflow prior to application of a coating or lining or other structural rehabilitation component or using the grout for sealing the entire manhole structure. If the entire manhole is to be sealed, grouting shall include corbel, wall, pipe seals, bench and invert as recommended by the manufacturer of the grouting material.

C. Drilling and Grout Injection:

1. Drilling grout injection holes in the manhole in strategic locations to re-direct flow coming through cracks and other defects in the wall, or to seal the entire exterior surface of the manhole, shall be in accordance with the recommendations of the grout manufacturer.

2. Grout shall be injected through the drilled holes using the recommended probe and applying pressures that will effectively inject the grout but, not cause damage to the manhole structure or the surrounding area.

3. Grout typically shall be injected through the lowest holes first, working the grout higher until the manhole is externally sealed with grout. Additional holes may be required to verify that the grout has encompassed the entire outside of the manhole.

4. The injection holes shall be cleaned and patched as recommended by the manufacture.

D. Testing and Acceptance:

1. Visual inspection – all leakage into the manhole must be eliminated.

3.05 CHANNEL RECONSTRUCTION

A. Remove all loose grout and rubble of existing channel. Rebuild channel by shaping and repairing slope of shelves or benches. Work shall include alignment of inflow and out flow ports in such manner to prevent the deposition of solids at the transition point(s). All inverts shall follow the grades of the pipe entering the manhole. Changes in direction of the sewer and entering branch or branches shall have a true curve of as large a radius as the size of the manhole will permit.

B. Channels shall be shaped to allow entrance of maintenance equipment into pipes including buckets, TV camera, etc.

3.06 MANHOLE PREPARATION:

A. Bypass pump sewage around the manhole or utilize flow through bypass systems to ensure that the liquid flow is not touching surfaces to be coated.

B. Clean interior surfaces of manhole of debris, dirt, oil, grease, remains of old coating materials, and any other extraneous materials as required by the lining system manufacturer.

C. Pressure wash manhole walls to remove loose mortar, concrete and debris.

D. Pressure washing levels, used for cleaning, shall be as recommended by the manufacturer.

E. Repair irregularities in manhole using materials, compatible with proposed resurfacing material, as recommended by the manufacturer.

F. Repair leakage in manhole using materials, compatible with proposed resurfacing material, specified in these contract specifications.

G. Trim and grout incoming laterals and pipes as required and/or specified.

H. All manholes steps shall be removed flush to the manhole surface prior to application of a SYSTEM unless otherwise specified in the contract documents as required by the Owner.

3.07 INSTALLATION OF CEMENTITOUS LINING SYSTEM

A. The work consists of troweling, spray applying and/or spincasting cementitious materials to the inside of the existing manhole.

B. Flow shall be controlled or removed from application surfaces until the cementitious SYSTEM is set and cured in accordance with the requirements of the material manufacturer.

C. Surfaces shall be prepared in accordance with the requirements of the SYSTEM manufacturer. Material shall be applied only when manhole is in a damp to wet or saturated surface dry (SSD) state, or in accordance with the requirements by the SYSTEM manufacturer.

D. Active infiltration shall be stopped prior to application of the cementitious SYSTEMS.

E. Cementitious material shall not be applied during freezing weather conditions where the ambient temperature is 37°F (3°C) and falling, or when the temperature is anticipated to fall below 32°F (0°C) within the ensuing 24 hours.

F. Cementitious material shall be mixed with potable water in accordance with the requirements of the SYSTEM manufacturer. Once mixed to proper consistency, the cementitious mortar shall be pumped to the nozzle or rotating applicator head.

G. Application of cementitious SYSTEMS shall be in accordance with the requirements of the SYSTEM manufacturer and ASTM F2551.

H. Manhole steps shall be removed flush to the manhole surface prior to installation of the cementitious SYSTEM unless otherwise specified in the contract documents.

I. Application

1. Spray or spincast application methods shall be executed in accordance with the requirements of the SYSTEM manufacturer.

2. Spraying shall be performed by starting at the manhole invert and progressing up the wall to the chimney. The liner shall be terminated ½ inch down the flow channel when one exists. The remainder of the channel shall be lined with a polymer concrete grout. The transition shall match the thickness of the liner and taper back to the host pipe at a minimum thickness of 0.5 inches. For instances where the adjacent pipe was lined, match the liner thickness for a flush transition.

3. The spincast device used for application is raised and lowered at a controlled retrieval speed conducive to centrifugally casting the mortar to produce a uniform application to the interior surfaces of the manhole.

4. Cementitious material shall be applied at a uniform minimum thickness in accordance with the contract documents.

5. Cementitious material shall be applied to the bench area in such a manner as to provide for proper drainage.

6. Cementitious material thickness may be verified using a depth gauge. If additional material is required, the rotating applicator head shall be placed at that level and application shall recommence until that area is thickened.

7. Spray and spincast application methods may be used in conjunction to facilitate application of the mortar material to irregularities in the contour of the manhole walls and bench areas.

8. Once spray application has completed, the cementitious material shall be troweled to densify and smooth out the surfaces while compacting the material into voids. A brush or broom finish may be conducted as required by the SYSTEM manufacturer specified for top coating.

9. For the proper cure, the manhole cover shall be replaced no more than 10-20 minutes after troweling is completed to avoid moisture loss in the material due to sunlight and wind.

J. Testing and Acceptance

1. Perform a visual inspection to verify that there is no infiltration and that the surface appears uniform, free of cracks or loose material.

2. Provide thickness verification as recommended by the manufacturer.

3. Obtain cube or cylinder samples of the cementitious material for each manhole or batch of material, as required by the Owner. The samples shall be prepared by the Contractor and sent to the Owner, through a chain of custody, to an independent laboratory for testing of compressive strength at 28 days in accordance with ASTM C39 or ASTM C109.

3.08 INSTALLATION OF POLYURATHANE LINING SYSTEM

A. The work consists of troweling, spray applying and/or spincasting polymeric materials to the inside of the existing manhole.

1. Contractors qualified in accordance with these specifications shall perform the application or installation of the polymeric SYSTEMS.

B. Flow shall be controlled or removed from application surfaces until the polymeric material is applied and cured in accordance with the requirements of the material manufacturer.

1. Surfaces shall be cleaned and prepared as required by the polymeric material manufacturer and defined in SSPC SP-13/NACE No. 6 to acceptable moisture levels within the substrate and with a uniform, sound clean neutralized surface having sufficient profile to promote a mechanical bond with the polymeric coating. Oils, grease, incompatible existing coatings, waxes, form release, curing compounds, efflorescence, sealers, salts, or other contaminants which may affect the performance and adhesion of the coating to the substrate shall be removed.

2. Concrete and/or mortar damaged by corrosion, chemical attack or other means of degradation shall be removed so that only sound substrate remains.

3. Polyurethane, polyurea, and hybrid polymeric SYSTEMS shall be applied only when manhole surfaces are in an oven-dry or air-dry state, with the surface feeling dry to the touch, or as required by the SYSTEMS manufacturer. The prepared surface profile shall be to ICRI 310.2R CSP 3-5, or as required by the SYSTEMS manufacturer.

C. Active infiltration shall be stopped prior to application of polymeric SYSTEMS.

D. Repair materials compatible with the polymeric SYSTEMS shall be used to fill voids, bugholes, and other surface defects which may affect the performance or adhesion of the polymeric SYSTEMS and to repair, smooth or rebuild surfaces providing a concrete or masonry substrate suitable for application of the polymeric SYSTEMS.

E. Areas where corroded rebar is observed shall be cleaned and prepared in accordance with ICRI 310.1R and coated with the specified or approved polymeric material as recommended by the polymeric SYSTEMS manufacturer.

1. Repaired or resurfaced surfaces shall be inspected for cleanliness and suitability prior to application of the polymeric SYSTEMS. Additional surface preparation may be required prior to application.

F. Specified surfaces shall be shielded to avoid exposure to direct sunlight or other intense heat source throughout the application process. Where varying surface

temperatures exist, coating application shall be scheduled when the temperature is falling and not rising as recommended by the polymeric material manufacturer.

G. Portland cement-based precast or poured-in-place structures shall have cured a minimum of 28 days since manufacture or installation date prior to commencing with application of a polymeric SYSTEM, or as recommended by the manufacturer.

H. The polymeric SYSTEMS shall be terminated at the joint between the manhole chimney and frame, or as recommended by the SYSTEMS manufacturer and submitted as a part of the PWS.

I. Spray Application

1. Spray or spincast application methods shall be executed in accordance with the requirements of the SYSTEMS manufacturer.

2. The spincast device used for application is raised and lowered at a controlled retrieval speed conducive to centrifugally casting the polymeric material to produce a uniform application to the interior surfaces of the manhole.

3. Polymeric material shall be applied to the uniform minimum thickness as approved in the design submitted in accordance with the contract documents.

4. Subsequent top coating or additional coats of a polymeric material shall occur within the material's recoat time. Additional surface preparation procedures will be required if this recoat time is exceeded. Requirements from the polymeric SYSTEMS manufacturer for the specific application, in consideration of temperature and project conditions, shall be followed by the Contractor.

J. When the polymeric materials rely on a mechanical bond with adjoining construction materials throughout the manhole structure to effectively seal and protect concrete or masonry substrates from infiltration and attack by corrosive elements, requirements by the polymer SYSTEMS manufacturer shall be followed.

K. TESTING AND ACCEPTANCE

1. Perform a visual inspection to verify that there is no infiltration, the installed SYSTEM uniformly covers specified surfaces, and is free of pinholes, or defects that could reduce its intended performance.

2. Measure the installed thickness of the SYSTEM to confirm it meets the minimum value required in these specifications. Wet film thickness shall be measured in accordance with ASTM D4414.

3. Inspect surfaces of the installed SYSTEM using holiday detection or spark testing equipment in accordance with NACE SP0188 to identify holidays and pinholes. Repair the identified defects and re-test.

4. Conduct adhesion testing in accordance with ASTM D7234 to verify that the SYSTEM is bonded to the manhole substrate, as evidenced by substrate failure during testing (if system is designed for bonded). Repair damage from testing, following the SYSTEM manufacturer's recommendations.

3.09 CURED-IN-PLACE MANHOLE (CIPM) SYSTEMS

A. The work consists of installation of a reinforced fabric tube saturated with a polymer resin into a manhole that is expanded to conform to the existing manhole using air pressure and cured in place using controlled steam. Installation shall be performed in accordance with the requirements of the SYSTEM manufacturer or ASTM F3033.

1. Contractors qualified in accordance with these specifications shall perform the installation of the CIPM SYSTEM.

B. Flow shall be controlled or removed from installation surfaces until the CIPM is installed and cured in accordance with the requirements of the CIPM SYSTEMS manufacturer.

1. When the CIPM is not extended within the channel, a bridge or flow through tube shall be installed within the channel. After installation, the bottom of the CIPM shall be cut near the flow line in the channel and the pipe connections opened to restore flow.

2. When the CIPM is extended within the channel, the pipe openings shall be plugged prior to CIPM installation. Plug the pipes entering the manhole and line the flow channel to the edge of the pipe. Trim pipe openings and restore the flow in the channel.

C. Surfaces shall be cleaned and prepared as required by the CIPM SYSTEMS manufacturer to acceptable moisture levels within the substrate and with a sound clean neutralized surface having sufficient profile to promote a mechanical bond with the liner when specified. Fats, oils, and grease shall be removed using hot water and an environmentally safe detergent when pressure washing the surfaces. The with the liner when specified. Fats, oils, and grease shall be removed using hot water and an environmentally safe detergent when pressure washing the surfaces. The existing casting shall be prepared using a grinder or abrasive blasting.

D. SYSTEMS shall be installed only when manhole surfaces are in a saturated surface dry (SSD) state, with no visible water dripping or running over the manhole walls. The prepared surface profile shall be to ICRI 310.2R CSP 3-5, or as required by the CIPM SYSTEMS manufacturer.

E. Manhole steps shall be removed flush to the manhole surface prior to installation of

1. CIPM SYSTEM unless otherwise specified in the contract documents.

F. Active infiltration shall be stopped prior to installation of the CIPM SYSTEMS.

G. Repair materials compatible with CIPM SYSTEMS shall be used to fill holes, missing bricks, and voids larger than a baseball as recommended by the CIPM SYSTEMS manufacturer.

H. Remove loose grout and rubble of existing channel. Rebuild the channel by shaping and repairing slope of shelves or benches. Work shall include alignment of incoming and outgoing pipe flow in such manner to prevent the deposition of solids at the transition point(s). Structure invert shall follow the grades of the pipe entering the manhole.

I. CIPM Premade-Liner Installation

1. The Contractor shall furnish materials, equipment, tools, and labor as required for the rehabilitation of the manholes specified, including the installation of the Premade-Liner.

2. Line bench area with CIPM material placed in the bottom of the manhole and extending a minimum of 6 inches (150 mm) up the manhole wall.

3. Saturate the Premade-Liner with resin. Insert it into the manhole, pressurize using air and cure with steam or hot air, or pressurize using water and cure with hot water following the requirements of the CIPM SYSTEMS manufacturer.

J. CIPM Tube Installation

1. The Contractor shall measure the manhole depth and cut the Tube from a bulk roll to match the depth of the manhole.

2. Using a controlled vacuum impregnation process, the resin is manually measured and mixed and introduced into the Tube following the requirements of the CIPM SYSTEMS manufacturer.

3. The resin impregnated Tube is inverted through the center of the retaining ring until the liner is fully turned inside out and positioned within the manhole.

4. An inflation bladder inserted within the Tube is pressurized to expand the Tube against the interior surfaces of the manhole and maintained until cured.

5. After cure is complete, the inflation bladder is removed and the CIPM Tube is trimmed at the top of the manhole frame flush with the manhole cover seat.

K. Testing and Acceptance

1. Perform a visual inspection to verify that there is no infiltration through the installed SYSTEM, and that it is free from severe wrinkles, areas deficient from uncured resin, delamination of the fabric layers, hollow areas behind the liner, or other defects that could reduce the intended performance of the SYSTEM.

2. Measure the SYSTEM thickness and take samples to test for mechanical properties per manufacturer's recommendations to confirm it meets the minimum value required in these specifications. Provide wetout documentation.

3.10 CHAIN OF CUSTODY

A. The Contractor shall perform all testing in the presence of the Owner's representative. The Owner's representative shall receive test samples from the Contractor and transmit samples to a third party testing laboratory. The Owner's representative will maintain the chain of custody of all samples that are transmitted and tested to verify SYSTEM compliance with these contract documents.

3.11 CLEAN-UP:

A. Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

END OF SECTION

SECTION 33 01 40.02

CURED-IN-PLACE PIPE LATERAL AND CONNECTION LINING

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Renewal of existing sanitary sewer lateral connections and 10 feet up the lateral by installation of a resin impregnated flexible felt tube into the existing lateral line utilizing a vertical inversion standpipe and hydrostatic head, pulled in place, or other approved method and curing by circulating hot water or other approved means to produce a hard, impermeable pipe.

B. This specification covers the supply and installation of lateral and connection liners using cured-in-place pipe (CIPP).

1.02 REFERENCES:

A. ASTM F2561-20 – Standard Practice for Rehabilitation of a Sewer Service Lateral and It's Connection to the Main Using a One Piece Man and Lateral Cured-in-Place Liner

B. ASTM F3240-19 – Standard Practice for Installation of Seamless Molded Hydrophilic Gaskets (SMHG) for Long-Term Watertightness of Cured-In-Place Rehabilitation of Main and Lateral Pipelines

C. ASTM D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials;

D. ASTM D2990 - Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics;

E. ASTM D5813 – Standard Specification for Cured-In-Place Thermosetting Resin Sewer Piping Systems;

F. ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-impregnated Tube;

G. ASTM F2019 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled In Place Installation of Glass Reinforced Plastic (GRP) Cured-In-Place Thermosetting Resin Pipe (CIPP)

1.03 DEFINITIONS:

A. Cured-in-place-pipe (CIPP) means trenchless sewer rehabilitation by installing a resin-felt composite structure which when cured will form a continuous-close fit liner within an existing sewer.

B. Non-Reinforced CIPP liners shall be considered any CIPP liner constructed from a non-reinforced felt.

C. Reinforced CIPP liners shall be considered any CIPP liner constructed from either a carbon fiber or glass fiber reinforced felt.

D. T-Line: Designation appearing in the Contract Documents that identifies the scope of work covered by this specification section, "Cured-In-Place Pipe Lateral and Connection Lining."

1.04 QUALIFICATIONS:

A. The Contractor shall have a minimum of three (3) years of continuous experience installing CIPP lateral and connection liners in pipes/laterals of a similar size and length as contained in this contract.

B. In order for the Contractor to be considered qualified, a minimum quantity of the exact liner proposed must have been successfully installed previously by the Contractor as described below as applicable to the project:

1. Must have successfully lined a minimum of 100 laterals from the sewer main in the United States.

2. Must have a minimum of 5-years of active experience in the commercial installation of lateral lining. Installers who have less than 5-years of installation experience can qualify by having manufacturer's representative present during all lateral installations.

3. Documentation showing the Contractors experience shall be submitted with their Bid and include a description of the work performed, the time period of performance, and shall include the name, address, and telephone number of the owner agency or municipality. Separate experience documentation shall be provided for both the contractor and individual technicians who will perform the work.

4. Specialty technicians shall be certified by the equipment manufacturer and/or its authorized representative. Certifications shall be submitted to the Engineer.

1.05 SUBMITTALS:

A. Installation of CIPP liners shall not commence prior to submission and review of the submissions identified herein by the Engineer.

B. Provide CIPP designs for review by the Engineer a minimum of ten (10) Business Days prior to manufacturing of the liner.

1. CIPP thickness computations including all specified design checks identified in 1.06. Identify design assumptions based on a review of the sewer inspection that differ from the information provided in the Specifications for the existing sewer design conditions. Individual calculations shall be submitted for each liner and stamped by a Professional Engineer registered in the State of Ohio.

2. Name and manufacturer of the resin and felt tube proposed for each CIPP.

3. Means of liner installation and curing method (e.g. air/steam, water, air/UV).

4. CIPP material properties used for design.

5. Host pipe measurements identified by the Contractor in accordance with Section 33 04 30.16, including the following:

   a. Sewer length

   b. Host pipe dimensions

   c. Sewer invert depths

6. Pre-design inspection where specified

7. Liner sizing. Identify under sizing from the measured circumference and anticipated liner stretch to form a close fit with the host pipe.

8. As part of the design calculation submittal, the liner manufacturer shall submit a tabulation of time versus temperature. This tabulation shall show the lengths of time that exposed portions of the liner will endure without self-initiated cure or other deterioration beginning. This tabulation shall be at 5°F increments ranging from 70°F to 100°F. The manufacturer shall also submit his analysis of the progressive effects of such "pre-cure" on the insertion and cured properties of the liner. This information shall be submitted in a timely fashion prior to construction. The minimum liner thickness is for materials with characteristics as shown. Bidders with materials with other characteristics must supply complete information in their bids of the values as listed for ascertaining minimum thickness.

9. Other information that may reasonably be required by the Engineer to confirm the CIPP design proposed conforms to the specified requirements and design intent.

C. Provide resin samples within five (5) Business Days of a request by the Engineer. Samples shall be provided as follows:

1. Arrange for the manufacturer of the resin to forward a reference sample of each type of resin proposed for use on the works to a test laboratory designated by the Engineer to be used as a comparative reference sample for infrared spectrum testing.

2. When requested by the Engineer, deliver a representative sample from each resin batch to be used on the project before adding the catalyst from the wet-out facility to a test laboratory designated by the Engineer.

3. The Engineer will arrange and pay for an infrared analysis of the samples, if required for the project.

D. Submit a liner impregnation protocol that provides information on the following a minimum of five (5) Business Days prior to wet of out liners:

1. Resin impregnation method.

2. Designated location of the wet out facility.

3. Documentation that the resin to be used has not exceeded its shelf life as recommended by the manufacturer of the resin.

4. Volume and weight of resin to be impregnated into each liner and repair section including the proposed excess allowance for polymerization and migration (typically 7%) into cracks and joints of the host pipe.

5. Roller gap setting required to provide the final installed CIPP thickness based on the proposed volume of resin.

6. Details of the wet-out procedure for internal point repair CIPP.

E. Submit a liner installation protocol that provides information on the following a minimum of five (5) Business Days prior to installation of CIPP:

1. Proposed main line and sewer service flow control arrangements in accordance with 3.02. Note, flow control plans may be submitted separate from the liner installation protocol.

2. Installation and curing method complete with proposed equipment.

3. Liner installation specifics as per Clause 7.4 of ASTM F1216 for inversions, Clause 6.4 of ASTM F1743 for pull-in installations, and/or Clause 6.2 of ASTM F2019 for air inversion methods with reinforced tubes.

4. Details of pre-liner installation, if utilized.

5. A full curing protocol, including:

a. Required curing heads and times as per Clause 7.6.3 of ASTM F1216 for inversions of non-reinforced tubes, Clause 6.6.3 of ASTM F1743 for pull-in installations, and/or Clause 6.6.3 or 6.7.3 of ASTM F2019 for steam and UV curing methods, respectively. Curing protocols will provide specific direction on:

(1) Recognized temperature for exothermic reaction

(2) Curing times or in the case of UV light cures, rate of travel of the ultraviolet light train assembly, pressures, temperature of the liner, and the amount and power of the lamps in operation

(3) Length of time to full cure after exotherm has occurred and recommended adjustments to curing time for complex heat sink or temperature variations that may occur during the curing period.

(4) Cool down rates for hot water and steam cure methods.

b. Curing temperatures

c. Inversion and cure pressures (minimum and maximum)

d. Rate of travel of the UV light train and amount of lamps in operation in the case of UV cures.

6. Provide the maximum allowable axial and longitudinal tensile stress for the fabric tube and the arrangement for monitoring pull-in forces during installation if liner insertion is to be by pull-in methods.

7. Number and location of heat source monitor gauges.

8. Number and location of thermistors to be used for monitoring the temperature of the liner during the curing process.

9. Estimated length of time required to reinstate the main line sewer and sewer services.

10. Method of styrene management to be employed.

11. Submission Requirements:

a. Tabular installation protocols showing multiple installations are acceptable for all small diameter liners (considered 18 inches in diameter and smaller), provided they meet all other requirements outlined herein.

b. Installation protocols for all large diameter sewers (considered greater than 18 inches in diameter) shall be submitted as individual submissions.

F. Submit a CIPP sampling protocol that provides the following:

1. Detailed procedure for preparing plate samples, including a sample plate sample preparation quality control form. The Contractor shall provide a filled out plate sample preparation form for each plate sample provided, signed off by the wet out supervisor and project manager affirming the correct preparation of the samples.

The form shall include the dimensions of the sample, direction of the circumferential fibers, and date of preparation, location of preparation.

2. Sampling procedures for plate samples, confined pipe samples.

3. Description of confined pipe forms to be utilized.

4. Procedure, complete with diagram for placement of heat sink (sand bags) for confined pipe samples.

5. Sizes for all samples to be obtained.

6. Liner repair products and procedures for direct cut samples.

G. Submit chemical resistance results for each proposed Liner System.

H. Submit third liner third party testing results. Third party test results that do not implicitly indicate the resin and tube name on the actual laboratory report shall be supported by the following backup documentation:

1. A certificate of compliance signed by a representative of the Supplier and a public notary indicating the resin and tube name tested on said reports, or

2. Copies of the appropriate contract specifications or approved shop drawings clearly indicating the resin and tube used on and subsequently tested and reported on said reports.

1.06 DESIGN OF CIPP LINERS:

A. Design Objectives

1. Maximizing the structural enhancement of the sewer by installing a close-fit CIPP.

2. Maximize the internal diameter of the rehabilitated sewer with as little impact on the hydraulic capacity of the sewer as possible.

3. Reducing infiltration and exfiltration.

4. Preventing root intrusion.

5. Providing sufficient chemical resistance to prevent further sewer pipe degradation related to the conveyance of sewage.

6. Minimizing sewer service disruption during rehabilitation.

7. Minimizing the time required to complete the sewer rehabilitation.

8. Minimizing disturbance to pavements and boulevards.

9. Minimizing disruption to vehicular and pedestrian traffic.

10. Minimizing the impact of construction on commercial, industrial, and institutional facilities.

11. Select a CIPP product and construction approach for rehabilitation with the intent towards maximizing the achievement of these design objectives.

12. Additional design objectives for internal point repair CIPP include.

    a. Providing a smooth transition between the internal point repair CIPP and the host pipe to prevent the build-up of solids and minimize wear on the repair due to routine sewer cleaning and other maintenance activities.

    b. Filling any existing voids outside the sewer at the point of repair

B. General

1. Chemical and mechanical properties of the liner based on the waste stream to establish and minimum design life of 50 years.

2. Size CIPP in accordance with the design objectives to provide a close-fit to the host pipe with no annulus except for the maximum allowable diametric shrinkage due to curing permitted in ASTM D5813.

3. Design features of internal point repair CIPP shall include:

    a. Design internal point repair CIPP as a gravity pipe in a fully deteriorated pipe condition and the depth of cover calculated based on the specific location of the repair in the sewer or sewer service.

    b. Tapered end sections to promote a smooth transition from the repair to the host pipe.

    c. A means to facilitate flow through by-pass of existing dry weather flow during the course of the repair.

4. Long-term values for flexural modulus of elasticity and flexural strength will be considered to be the projected value at 50 years of a continuous application of the design load based on the specific resin and felt composite as established by ASTM D2990 (or equivalent ISO or otherwise accepted testing method) based on an applied stress level of 25% of the yield strength of the liner and approved for use in the pre-qualification process. A minimum test length of 10,000 hrs is required. The Contractor shall provide supporting long term test data conforming to ASTM D2990 for any resin and felt composites not approved for use in the prequalification process.

5. The Contractor shall also provide short term test data on the modulus of elasticity and flexural strength of the in place composite structure conforming to ASTM D790 for any resin and felt composites proposed for use on the project.

C. Minimum Loading Assumptions:

1. Unless otherwise specified, the groundwater table shall be assumed to be at ground surface.

2. Calculate soil loads based on saturated soil unit weight of 120 pound per cubic feet.

3. Design calculations shall consider both maximum and minimum soil cover scenarios for each liner. The governing load case shall govern the design.

4. The following live loads shall be included in the design:

a. Sewers crossing beneath rail lines: Where identified, applied soil pressures from a Cooper E80 rail load shall be estimated and utilized in the design of the CIPP liner. Rail loads shall include a track allowance dead load of 200 lb/ft. Applied rail loads at depth shall be calculated using the Boussinesq solution for distribution of soil stresses from surface point loads. Impact factors for rail loads shall be calculated in accordance with the AREMA Manual for Railway Engineering.

b. All other sewers: The applied soil pressures from an AASHTO HS 25 design truck unless a higher or lower value is indicated in the contract specifications shall be estimated and utilized in the design of the CIPP liner. Applied soil pressures from AASHTO design truck loads shall be estimated in accordance with AASHTO LRFD Bridge Design Specifications, Seventh Edition (2014).

5. Unless otherwise specified, applied soil pressures at depth caused by superimposed surface loads shall be calculated using the Boussinesq solution for distribution of stresses from surface point loads.

D. Hydraulic Design Checks

1. Perform a design check to confirm that the full flow hydraulic capacity of the CIPP will be equal to or greater than the existing sewer. Use “Manning’s” formula with assumed ‘n’ value of 0.012 for the CIPP and 0.015 for the existing sewer. Report any sewers showing a decrease in post lining flow capacity from existing conditions.

E. Circular CIPP Design – Minimum Design Assumptions

1. Designed in accordance with ASTM F1216 Appendix X1 assuming fully deteriorated design condition.

2. An enhancement factor (K) of 7, assuming a close fit with the host pipe.

3. Retention Factor for Long Term Flexural Modulus to be used in Design shall be 50%.

4. Soil Density Shall be assumed 120 pcf.

5. Minimum factor of safety (N) of 2 for restrained buckling analysis.

6. Modulus of soil reaction (E's) will be assumed to be 700 psi unless for sewers with depth to inverts of less than 10 feet, and 1,000 psi for 10 feet or greater.

7. The following minimum values for ovality of the existing sewer shall be used unless otherwise specified or as determined from observation of the maintenance inspection:

   a. Partially deteriorated design – 3%

   b. Fully deteriorated design – 2%

F. The Contractor shall confirm the design conditions stipulated with the design equations and advise the Engineer of any conditions more adverse than those identified with the designs. If field conditions are found to be more adverse than those identified with the designs the Engineer (designer) will provide new design curves for the design conditions measured on site. Increases to the liner thickness based on the discovery of more adverse design conditions will be considered a Change in Work as defined by the General Conditions.

G. Existing Sewer Design Conditions

1. The assessment of the liner system design conditions and site-specific repairs required to accommodate lining were based on the conditions observed from sewer inspections. Copies of these video inspections are available to the Contractor upon request to the Engineer.

2. The specific design conditions applicable to each CIPP lining location will be fully deteriorated for all liners.

1.07 WARRANTY

A. A Warranty period of CIPP work will be 1 year from the date of installation but no earlier than the completion date of satisfactory warranty CCTV inspections (if performed) and resolution of issues discovered during the warranty CCTV. Certification of acceptance of the Work will not, however, relieve the Contractor from his or her responsibilities for any breach of the Contract including, but not limited to, defective or deficient Work appearing after the date of such certification.

B. All defects found by in the Warranty period will be rectified at the Contractor's expense within 90 days of discovery. A repair proposal with adequate supporting documents showing that the repair will fully reinstate the structural integrity of the CIPP lining will

be submitted by the Contractor to the Engineer for review and approval prior to starting the repair of any found defects. Defects may include but are not limited to leakage, cracking, loss of bond, or other discontinuity.

C. Once the repair has been installed by the Contractor, the sewer will have its warranty period extended one year from the date the repair was accepted by the Engineer.

D. The Owner may perform warranty inspections with its own personnel or personnel independent of the installation Contractor.

E. All CIPP lateral and connection liners shall be certified by the manufacture for specified material properties for the repair. The manufacturer warrants the liner to be free from defects in raw materials for ten (10) years from the date of installation. During the warranty period, any defects that affect the integrity, strength or water tightness of the installed pipe, shall be repaired at the Contractors expense.

PART 2 - PRODUCTS

2.01 GENERAL CIPP MATERIALS REQUIREMENTS

A. Non-Reinforced CIPP Products

1. Non-Reinforced CIPP products shall conform to the requirements of ASTM F1216 and D5813.

B. Reinforced CIPP Products

1. Reinforced CIPP products shall conform to the requirements of ASTM F2019 and D5813. Notwithstanding ASTM F2019, the fabric tube may be reinforced with either glass or carbon fibers, as required to achieve the desired short and long term material properties and may be installed via inversion methods. The materials of the Liner System, Tube and Resin, shall comply with the requirements of ASTM D5813 Sections 5, 6, 7, and 8, unless noted otherwise.

C. If a calibration hose is used for inflation of the Liner System, it shall comply with the requirements of ASTM F1743 or ASTM F2019.

D. Prior to construction, the Resin manufacturer shall be required to submit a resin sample for infrared analysis. The infrared spectrum generated from this sample may be compared to the spectrum obtained from samples of the actual Resin used to wet-out the liner at the Engineer’s discretion.

E. The minimum structural properties of the Liner System shall satisfy the requirements of Table 1 as per ASTM F1216, or

F. Table 2 as per ASTM F2019.

Table 1: Minimum Properties as per ASTM F1216

Component	Structural Property	Minimum Value (MPa)	Minimum Value (PSI)
Tube	Tensile Strength	21	3,000
Liner System	Flexural Strength	31	4,500
Liner System	Flexural Modulus	1724	250,000

Table 2: Minimum Properties as per ASTM F2019

Component	Structural Property	Minimum Value (MPa)	Minimum Value (PSI)
Tube	Tensile Strength	Declared value	Declared value
Liner System	Flexural Strength	103	15,000
Liner System	Flexural Modulus	5000	725,000

H. Verification of structural properties to be used in design shall be made by attaching relevant third party test results. Reports verifying structural properties shall conform to the requirements of Table 3. Flexural strength, tensile strength, and flexural modulus values shall be based on field test results attained by the Contractor with the specific liner system, tube, and resin proposed for use on this project.

I. Type testing by the manufacturer of the resin system shall not be used to support design values for short term strength and stiffness, only results from field sampling on previous representative projects.

Table 3: Reference Standard for Structural Property Verification

Structural Property	Applicable Standard	Report Requirements
Tensile Strength (Tube)	ASTM D638	Section 12 of ASTM D638
Flexural Strength and Flexural Modulus (Liner System)	ASTM D790	Section 13 of ASTM D790 (as modified in Appendix X2 of ASTM F2019 for UV)
Long Term Flexural Creep Modulus (Liner System)	ASTM D2990	Section 13 of ASTM D2990 (as modified in Appendix X3 of ASTM F2019 for UV)
Tube	Tensile Strength	Declared value	Declared value
Liner System	Flexural Strength	103	15,000
Liner System	Flexural Modulus	5000	725,000

2.02 LATERAL AND CONNECTION LINER MATERIAL REQUIREMENTS

A. Mainline Liner Tube - The main liner tube shall be formed from a flat sheet of resin absorbent material suitable for CIPP. The forming of the tube is accomplished by one end of the textile sheet overlapping the second end and sized accordingly to create a circular lining equal to the inner diameter of the lined main pipe. The interior of the textile sheet shall be laminated with an impermeable, translucent flexible membrane. The textile sheet before insertion shall be permanently marked on the membrane as a "Lateral Identification" correlating to the address of the building the lateral pipe provides service.

B. Lateral Liner Tube - The exterior of the lateral liner tube shall be laminated with an impermeable, translucent flexible membrane. Longitudinal seams in the tube shall be stitched and thermally sealed. The lateral tube will be 10 feet continuous in length or longer where specified. The lateral tube will be capable of conforming to offset joints, bends, bells and disfigured pipe sections. For pipe configurations that contain pipe diameter transitions, the transition liner tube must be formed by the manufacturer prior to installation to ensure proper wall thickness per ASTM F1216.

C. Mainline Connection - The main tube and lateral tube shall form a one-piece assembly by stitching the lateral tube to the mainsheet aperture. The connecting end of the lateral tube shall be shaped to match the aperture and curvature of the main tube. The lateral tube and main tube shall be sealed by use of a flexible UV cured adhesive/sealant applied in a factory controlled setting. The main/lateral tube assembly shall take the shape of a "TEE" or "WYE" with corresponding dimensions such as a curved circle or a curved elliptical opening in the pipefitting.

D. Hydrophilic Gasket Seals - The mainline tube shall include a seamless molded flange shaped gasket attached to the main liner tube at the connection or four molded hydrophilic O-rings at the mainline termination ends in accordance with ASTM the latest version of -19. The gasket(s) must be a minimum of 2.5mm thick and must retain this consistent thickness under installation pressures. The lateral tube shall include two compression molded O-ring gaskets attached six-inches from the terminating end of the lateral tube. The hydrophilic gasket seals must be manufactured in a controlled factory environment with strict quality control and quality assurance protocols. A liquid sealant, adhesives or other fluid like materials having paste like consistency will not be accepted.

E. Hydrophilic Gasket Test Data - The hydrophilic gasket seals shall conform to the latest version of ASTM F3240. The hydrophilic gasket seals shall include test data that supports substantial expansion properties so to form a watertight compression end seal at the terminating ends of the CIP-lateral liner. The test protocol shall simulate subterranean conditions and hydraulic loading at surface. Gasket seal submittals must include tests data simulating hydration/dehydration conditions for a period of 10,000-hours and the test results must successfully demonstrate and document long-term performance without deterioration, loss of material, flexibility, and expansion of the gasket during repeated cycles of hydration and dehydration.

F. Bladder Assembly - The liner assembly shall be surrounded by a second impermeable, inflatable, invertible, flexible translucent membrane bladder that will form a liner/bladder assembly. The translucent bladder shall facilitate vacuum impregnation while monitoring the resin saturation process.

PART 3 - EXECUTION

3.01 VERIFICATION OF EXISTING SEWER DIMENSIONS

A. Verify dimensional requirements of each sewer to be rehabilitated prior to design and manufacture of the CIPP tube in accordance with 33 01 30.16.

3.02 FLOW CONTROL

A. The Contractor shall ensure wet weather or excessive flow conditions can be pumped or otherwise accommodated through the work area. The Contractor shall schedule work requiring complete blockage of the sewer when the chances of wet weather events are minimized in accordance with 3.02.B.

1. When the flow demand on the lateral dictates that bypass pumping is required, the Contractor shall furnish all necessary pumping equipment, conduit, etc. to adequately and safely divert sewage flow around the work in a manner approved by the Engineer. No flow shall be discharged on the surface, into storm sewers, in ditches, or in waterways.

2. During a bypass operation, the pump shall be manned continuously: The Contractor shall maintain the pump and bypass equipment, and shall be responsible for any damages to public or private property due to the malfunction of same.

3. In the event of overflows caused by the Contractor's work activities, the Contractor shall immediately take appropriate action to contain and stop the overflow, clean up the spillage, disinfect the area affected by the spill, and notify Engineer in a timely manner.

4. Contractor will indemnify and hold harmless the Owner for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully or partially the responsibility of the Contractor. Should fines subsequently be imposed as a result of any overflow for which the Contractor is fully or partially responsible, the Contractor shall pay all such fines and all of the Owner’s legal, engineering, and administrative costs in defending such fines and claims associated with the overflow.

B. Weather

1. Review the weather forecast with the Engineer before each day of liner installation.

2. Delay installation of liners when the anticipated weather conditions are such that anticipated sewer flow will exceed the flow control measures provided.

3. The Contractor shall advise immediately of any weather-related delays.

4. The Contractor to schedule Work according to the weather; The Owner is not responsible for costs associated with weather related delays or damage.

C. All flow control shall be in accordance with 33 34 35.

3.03 SEWER CLEANING

A. Remove loose debris, solid debris, roots, and grease in accordance with 33 01 30.14 and 33 01 39.02 in order to adequately prepare the sewer for lining.

3.04 SEWER PREPARATION AND REPAIRS PRIOR TO LINING

A. Perform sewer preparation and repairs as indicated in the Specifications and drawings.

B. Complete the internal host pipe repairs, cleaning, and cutting indicated in the Rehabilitation Table.

C. Line Obstructions - Clear the sewer of obstructions, including but not limited to debris, roots, deposits, grease, and protruding laterals, that will interfere with the installation and long-term performance of the liner.

D. The Contractor shall install a cleanout at the respective right-of-way line, property line or easement line prior to or immediately after the lining procedure if a cleanout does not already exist. Cleanouts shall be in accordance with 33 01 40.03 Vacuum Inserted Sewer Clean-Out.

E. The Contractor shall deliver the liner to the site and provide all equipment required to insert the liner into the host pipe and cure it in place. The Contractor shall designate a location where the tube will be vacuum impregnated prior to installation. The Contractor shall notify the Engineer and Owner at least 72-hours prior to wet out to allow the Engineer and Owner to observe the materials and wet out procedure. All procedures to prepare the liner for installation will be in strict accordance with the manufacturer's recommendations. Any material not properly prepared shall be rejected and replaced with acceptable materials at the Contractor's expense.

F. It shall be the responsibility of the Contractor to notify the Engineer of line obstructions, offset joints, or collapsed pipe that will prevent the insertion of the tube or significantly reduce the capacity of the lateral. The Engineer with input from the Contractor shall determine the method of pipe repair required and shall address these concerns on a case-by-case basis.

G. Determination of laterals to be lined or replaced - Contractor shall perform a pre-CCTV inspection of the laterals. The Engineer will determine upon review of the CCTV inspection the quantity of laterals which will be renewed per plan.

H. The Contractor shall provide television equipment capable of properly documenting the conditions as found within the lateral. The camera equipment shall be capable of launching into the full length of each lateral and providing an accurate picture of the lateral to be lined. Lighting for the camera shall illuminate the entire periphery of the lateral.

I. Both a pre-lining and post-lining digital data video shall be submitted to the Engineer for approval. The Contractor shall launch into each lateral connection on both pre and post inspections. The digital data video shall be clearly and properly labeled. A digital data video and a suitable log shall be prepared by the Contractor during the Work and provided to the Engineer.

J. The liner shall be continuous and free of all visual and material defects except those resulting from pre-lined conditions (such conditions shall be brought to the attention of the Engineer prior to lining). There shall be no damage, deflection, holes, delaminating, uncured resin or other visual defects in the liner. The liner surface shall be smooth and free of waviness throughout the pipe. No visible leakage through the liner or at manhole or service lateral connections will be allowed. Any defects located during the inspection shall be corrected by the Contractor to conform to the requirements of the specifications and to the satisfaction of the Engineer. The Contractor shall not reactivate any section of lined sewer pipe until authorized to do so by the Engineer.

3.05 CONTINUOUS TEMPERATURE MONITORING

A. Where specified, the Contractor shall install the CIPP liners complete with a fiber optic thermal sensing cable (to be left in place) that is capable of continuously monitor curing temperatures along the entire length of CIPP liner. The cable and recording equipment shall be capable of temperature readings every 18 inches in real time. Curing data logs shall be submitted to the Engineer with the Quality Control records.

3.06 INSTALLATION OF CIPP - GENERAL

A. Notify residents before CIPP installation in accordance with 01 11 00 Summary of Work.

B. Install liners by inversion methods in accordance with ASTM F1216 or by pull-in methods in accordance with ASTM F1743 or ASTM F2019.

C. CIPP shall be cured by hot water, steam, or UV light sources. Alternate methods shall require Engineer approval.

D. Carry out workmanship in accordance with ASTM D5813.

E. Trim ends of CIPP neatly to fit flush with interior vertical surface and manhole benching and seal to make watertight.

F. Ensure termination points of internal point repairs provide a smooth and uniform flow transition to the host pipe for the full circumference of the repair.

G. Refer to the Rehabilitation Table for additional site specific installation conditions.

3.07 INSTALLATION OF LATERAL AND CONNECTION LINER

A. The finished liner shall be one continuous piece which lines 18" of the mainline pipe and 10' of lateral pipe or longer where specified. Liner shall be free from visual defects such as foreign inclusions, reverse curvatures, flats, dry spots, pinholes, and delamination. Visual inspection shall be accomplished by review of post construction CCTV. Should defects occur, remedial action shall be performed at no cost to the Owner. Potential remedial actions include but are not limited to removal and replacement of liner, or excavation based repairs and shall be approved by the Engineer.

B. It is the intent of this specification to provide for the renewal of sewer service laterals by the installation of a resin-impregnated flexible tube and a mainline/lateral connection seal. The tube is either inverted or pulled into the original service lateral through a newly installed or already existing cleanout and then expanded to fit tightly against the lateral by the use of water or air pressure. The resin system shall then be cured by elevating the temperature of the fluid (water/air) used for the inflation to a sufficient enough level for the initiators in the resin to effect a reaction. The finished pipe shall be such that when the thermosetting resin cures, the total wall thickness shall be a homogeneous and monolithic felt and resin composite matrix that will be chemically resistant to withstand internal exposure to domestic sewage.

C. When steaming out of the cleanout, the upstream side of the cleanout shall be plugged during insertion and curing of the liner assembly to ensure no flow enters the pipe and no air, steam, or odors will enter the building. When required, the main pipe flow will be by-passed. The pumping system shall be sized for peak flow conditions. The upstream manhole shall be monitored at all times and an emergency deflating system will be incorporated so that the plugs may be removed at any time without requiring confined space entry.

D. Resin Impregnation -The liner assembly is encapsulated within the translucent bladder (liner/bladder assembly), the entire liner including the flat sheet shall be saturated with the resin system (wet-out) under controlled vacuum conditions. The volume of resin used shall be sufficient to fill all voids in the textile lining material at nominal thickness and diameter. The volume shall be adjusted by adding 5% to 10% excess resin for the change in resin volume due to polymerization and to allow for any migration of resin into the cracks and joints in the original pipe. No dry or unsaturated area in the mainline sheet or lateral tube shall be acceptable upon visual inspection.

E. The lateral tube and inversion bladder shall be inserted into the launching hose. The main bladder and flat textile sheet (main liner tube) shall be wrapped around a "T-Launcher" launching device, formed into a tube and secured by use of rubber bands. A seamless molded flange shaped gasket shall be attached to the main liner tube by use of stainless

steel snaps. [Alternatively, when the flange shaped gasket is not used, the four hydrophilic O-rings may be used to secure the main bladder and flat textile sheet to the launching device.] The flanged gasket shall be inserted into the lateral pipe at the main/lateral juncture so that the brim of the flanged gasket is firmly seated against the mainline pipe liner. Two hydrophilic O-rings shall be positioned 6-inches from the terminating end of the lateral liner tube one to two inches apart. The launching device is inserted into the pipe and pulled to the point of repair. The pull is complete when the lateral tube is exactly aligned with the lateral pipe connection. The lateral tube is completely protected during the pull. The mainline liner is supported on a rigid T-Launcher device that is elevated above the pipe invert through the use of a rotating skid system. The liner assembly shall not be contaminated or diluted by exposure to dirt or debris during the pull.

F. The main bladder shall be inflated causing the main sheet to unwrap and expand; pressing the main tube firmly into contact with the main pipe and embedding the flange shaped gasket [or hydrophilic O-rings] between the main tube and the main pipe at the lateral opening. The lateral tube is inverted through the main tube aperture by the action of the lateral bladder extending into the lateral pipe to a termination point that shall be no less than two (2) feet from the exterior cleanout or predetermined termination point. The bladder assembly shall extend beyond each end of the liner, so the liner remains open-ended and no cutting shall be required.

3.08 STYRENE MANAGEMENT

A. Under no circumstances shall cure water or condensate containing styrene be discharged into a storm sewer or any other direct connection to surficial drainage courses or facilities.

B. The Contractor shall develop and implement a styrene management plan for each site that could reasonably be impacted by planned or inadvertent discharge of styrene into the environment via overflows or the land drainage system, based on the site specific conditions for the CIPP installation and boundary conditions at that site.

C. The Contractor shall submit styrene management plan(s) for each identified site at the request of the Engineer, or a minimum of five (5) days prior to lining.

D. The Contractor’s styrene management plan shall include one or more of the following methods of control:

1. Use of styrene free resins;

2. Use of on-site treatment systems where hot water curing methods are utilized;

3. 100% condensate capture and off-site disposal to the WWS system;

4. On-site monitoring to verify no residual styrene is discharged to the environment where UV curing methods are used.

E. All styrene management plans shall include sufficient details on:

1. Regulatory compliance considerations for discharge based on the Contractor's proposed resin selection, curing method, and discharge location for steam condensate or cure water, first flush, etc.

2. The means, methods, and techniques employed to mitigate styrene levels to within acceptable limits for the site specific application, including:

    a. Resin selection to eliminate or mitigate styrene levels;

    b. Cure considerations to mitigate excessive styrene volatilization;

    c. Handling considerations, post cure to mitigate levels discharged to aquatic or other environments that may be deleteriously impacted by excessive styrene levels.

F. The Contractor shall be responsible to undertake sufficient monitoring to confirm and demonstrate that discharge levels are consistent with the styrene management plan's stated discharge limit objectives. Provide a report on styrene monitoring results upon completion of liner installation.

3.09 QUALITY CONTROL RECORDS

A. Maintain the following Quality Control records of the work and provide to the Engineer after completion of the work.

1. Summary of the resin impregnation process including:

    a. Volume of resin supplied.

    b. Excess quantity of resin added during the wet out to account for polymerization and migration into the host pipe.

    c. Roller gap setting.

    d. Resin catalyst(s) used and volume if applicable.

    e. Time and location of the wet out.

    f. Means taken to store and transport the resin impregnated CIPP from the wet out facility to the job site.

2. Means of curing liners.

3. Continuous log of pressure maintained in the liner during the curing period.

4. Pulling force used to pull or winch CIPP into place in the host sewer and measured liner elongation.

5. Continuous log of temperature at boiler in and out and at all thermistors placed between the host pipe and the liner at all manholes during the initial cure, cure, and cool down periods.

6. For UV cures, monitoring shall also include the rate of travel of the UV assembly and the amount of lamps in operation during the curing process.

7. Continuous temperature monitoring logs.

3.10 CIPP SAMPLES FOR QUALITY ASSURANCE PURPOSES

A. General:

1. The Contractor shall provide the following samples from each CIPP liner:

a. Confined test sample in accordance with 3.10.B.

b. Plate sample in accordance with 3.10.C.

2. If it can be demonstrated that it is impractical to obtain confined test samples due to CIPP size and/or site specific conditions then results from test plate sample results modified in accordance with Section 77-4.01D(2)(c), item 3 of this specification will be used to confirm flexural strength and flexural modulus.

3. Schedule the installation of liners for which confined pipe samples are impractical to obtain after a minimum of three (3) previous CIPP linings on the same project have been completed and confined pipe and test plate samples have been secured to provide collaborative testing. The Contractor will coordinate and pay for CIPP sample testing to confirm the CIPP flexural strength, flexural modulus and thickness in accordance with the requirements of ASTM D5813, D790, and ASTM D3567.

4. The Engineer will review CIPP liner thickness results taken from test plates or unconfined samples on a case-by-case basis.

5. All samples shall be labeled as follows:

a. Asset number

b. Date of installation

c. Street name

B. Confined Test Samples

1. Where possible, use confined test sample methods to assess site-specific compliance requirements. Confined test sampling will be carried out, where possible, in accordance with Clause 8.1.1 of ASTM F1216 and as follows:

a. Provide necessary forms of the same diameter as the host pipe and secure a minimum 8" (200 mm) long full diameter confined test sample from each CIPP.

b. Locate the test sample from in an intermediate manhole or at a termination point and invert through the form.

c. Cut the CIPP sample to coincide with multi-piece form if used for CIPP larger than 18 inches (450 mm) in diameter to facilitate removal from the manhole.

2. The Contractor will coordinate and pay for CIPP sample testing to confirm the CIPP flexural strength, flexural modulus, and thickness in accordance with the requirements of ASTM D5813, D790, and ASTM D3567.

3. If it can be demonstrated that it is impractical to obtain confined test samples or other installed test samples due to CIPP size and site-specific conditions, then results from test plate samples will be used to confirm flexural strength and flexural modulus.

C. Test Plate Samples

1. Prepare test plate samples for each and every CIPP installation.

2. Prepare test plate samples in accordance with Clause 8.1.2 of ASTM F1216 and as follows from the actual CIPP and cure in the following manner:

a. In a clamped mold placed in the downtube or manhole for water-cured liners.

b. In a clamped mold placed in a container filled with uniformly distributed steam from the installation manhole for steam-cured liners.

c. As per ASTM F2019 for UV cured liners.

3. The Contractor will coordinate and pay for test plate sample testing to confirm the flexural strength, flexural modulus, and thickness in accordance with the requirements of ASTM D5813, D790, and D3567 in all instances where confined or other sampling techniques cannot be utilized. In instances where confined or other sampling techniques are not conclusive, test plate samples may be utilized to reconcile designs at the Contractor's expense.

3.11 POST CONSTRUCTION DESIGN REVIEW FOR TOTAL PERFORMANCE

A. The Engineer will perform a post-construction design review to confirm that the completed CIPP meets the 50 year design life structural requirements prior to issuance of Total Performance. The design review will utilize the measured values for flexural strength, flexural modulus, and CIPP thickness from the confined pipe sample testing, directly obtained samples, or the reduced strength/modulus values obtained from the test plate testing in circumstances where confined pipe samples are not able to be secured.

B. CIPP strength values will be further reduced to account for creep based on the creep reduction values identified during the CIPP design process to assess the suitability of the liner to meet the 50 year design life requirement. The use of full enhancement factors in this analysis will be limited to liners that are confirmed by visual classification to be close-fit liners based on the post-lining sewer inspection.

C. The Engineer will advise of any discrepancies between the constructed CIPP and the design requirements.

1. Deficiencies in the physical testing results for CIPP liners will be reviewed by the Engineer. The Engineer will undertake efforts to reconcile the design based on the physical test results for the deficient liner, and accounting for the verified condition of the host pipe prior to lining, the CIPP installation conditions, and the long-term use of the sewer to assess whether the installed CIPP meets the specified design objective.

2. Defects in CIPP liners will be reviewed on a case by case basis by the Engineer. The Engineer will consult with the Contractor and taking into account the condition of the host pipe prior to lining, the CIPP installation conditions, and the long term use of the sewer to assess the structural and performance ramifications of the defects.

D. The Contractor shall:

1. Perform necessary remedial measures to confirm that a CIPP deemed as structurally deficient will comply with the 50 year design life requirement such as confirmation of actual ovality, determination of a more representative groundwater elevation locally through monitoring, and supplemental strength testing and thickness measurements.

2. Repair sections of CIPP removed for supplemental testing by placing a full circumference internal point repair of the same thickness as the full segment liner over and extending 12 inches beyond each side of the cut section.

3. Install a supplemental CIPP of the required thickness to structurally enhance the installed CIPP if supplemental testing fails to confirm the CIPP will meet the design life of 50 years.

4. Review remedial action with the Engineer prior to implementation.

5. Perform further testing, monitoring and calculations and install structural enhancements at own cost.

3.12 SITE SPECIFIC DESIGN AND INSTALLATION CONSIDERATIONS

A. See Rehabilitation Table.

END OF SECTION

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SECTION 33 01 40.03

VACUUM INSERTED SEWER CLEAN-OUT

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide vacuum inserted sewer clean-out plumbing systems as indicated and in compliance with Contract Documents.

B. Provide and install a sewer lateral cleanout without conventional excavation using the VAC-A-TEE® vacuum excavation and snap-fit saddle process (or approved equal). Work includes locating the lateral, vacuum excavating a borehole, installing a molded PVC saddle and riser, testing, opening the lateral crown, and surface restoration.

C. It is the intent of this specification to provide a cost-effective installation of a sewer lateral cleanout without conventional excavation.

1.02 REFERENCES:

A. ASTM F3097-21 – Standard Practice for Installation of an Outside Sewer Service Cleanout through a Minimally Invasive Small Bore Vacuum Excavation

1.03 DEFINITIONS:

A. The following phrases shall have the following meanings for the purposes of the Work of this Section:

1. Vacuum inserted sewer clean-out shall mean VAC-A-TEE® by LMK Technologies or approved equal.

1.04 QUALIFICATIONS:

A. The Contractor shall have a minimum of three (3) years of continuous experience installing Vacuum inserted sewer clean-outs as contained in this contract.

B. In order for the Contractor to be considered qualified, a minimum quantity of the exact clean-out proposed must have been successfully installed previously by the Contractor as described below as applicable to the project:

1. Must have successfully installed a minimum of 100 Vacuum inserted sewer cleanouts from the sewer lateral in the United States.

2. Must have a minimum of 5-years of active experience in the commercial installation of clean-out installation. Installers who have less than 5-years of installation experience can qualify by having manufacturer's representative present during all clean-out installations.

3. Documentation showing the Contractors experience shall be submitted with their Bid and include a description of the work performed, the time period of performance, and shall include the name, address, and telephone number of the owner agency or municipality.

1.05 SUBMITTALS:

A. Installation of Vacuum inserted sewer clean-outs shall not commence prior to submission and review of the submissions identified herein by the Engineer.

B. Provide clean-out locations for review by the Engineer a minimum of ten (10) Business Days prior to installation.

C. Provide Vacuum inserted sewer clean-out designs for review by the Engineer a minimum of ten (10) Business Days prior to installation.

1. Name and manufacturer of materials.

2. Means of Vacuum inserted sewer clean-out installation.

3. Material properties.

4. Host pipe measurements identified by the Contractor in accordance with Section 33 01 30.16, including the following:

a. Host pipe dimensions and material

b. Sewer lateral invert depths

5. Pre-design inspection where specified.

6. Other information that may reasonably be required by the Engineer to confirm the Vacuum inserted sewer clean-out design proposed conforms to the specified requirements and design intent.

D. Submit a clean-out installation protocol that provides information on the following a minimum of five (5) Business Days prior to installation of Vacuum inserted sewer clean-out:

1. Installation methods in accordance with ASTM F3097-21.

2. Contractor shall perform a pre-CCTV inspection of the laterals.

1.06 QUALITY ASSURANCE:

A. Provide in accordance with Section 01 43 00.

B. Provisions:

1. Drawings and specification direct attention to certain features of equipment, but do not purport to cover all details entering into design and construction of the equipment, controls, or appurtenances.

2. Consideration shall be given only to products of manufacturers who demonstrate successful experience in manufacture, operation, and servicing equipment of type, size, performance, and reliability equal to that specified. Equipment and components shall be the product of a single manufacturer insofar as possible.

3. Equipment furnished to fit within the space allocated with adequate clearance for proper operation and maintenance.

C. Workmanship and Design:

1. Provide equipment such that all parts are designed for continuous and uninterrupted service, and such that lubrication, adjustment, or replacement of parts is possible without manufacturer's assistance. Corresponding parts of multiple units shall be interchangeable.

2. Install equipment that complies with state, local and federal codes and regulations.

D. Alternate Equipment and Arrangement:

1. If any equipment submitted for acceptance requires arrangement differing from that indicated or specified, Contractor to prepare and submit for review, detailed structural, mechanical and electrical drawings, and equipment lists showing all necessary changes and all special features of equipment proposed. Changes are at no additional compensation to the Contractor.

E. Qualifications of Installer:

1. Prior to installation, submit data showing the name and license of the installing contractor and that he has successfully installed systems of the same type and design as specified herein. Data shall include names and locations of at least two installations of such systems. Indicate type and design of each system and certify that each system has performed satisfactorily in the manner intended for not less than 18 months. The installing contractor shall be licensed to perform applicable plumbing systems installation in the state in which the project is located.

F. Qualifications of Construction Supervisor:

1. Provide a Construction Supervisor with a minimum of 5 years of experience in plumbing construction supervision who shall be responsible for the installation of the Work of this Section of the Specifications. The Construction Supervisor shall be licensed to perform applicable plumbing systems supervision in the state in which the project is located. Prior to installation, submit data for acceptance showing the name and license of the Construction Supervisor.

1.07 WARRANTY

A. A Warranty period of Vacuum inserted sewer clean-out work will be 1 year from the date of installation but no earlier than the completion date of satisfactory warranty CCTV inspections (if performed) and resolution of issues discovered during the warranty CCTV. Certification of acceptance of the Work will not, however, relieve the Contractor from his or her responsibilities for any breach of the Contract including, but not limited to, defective or deficient Work appearing after the date of such certification.

B. All defects found by Warranty Inspection will be rectified at the Contractor's expense within 90 days of discovery. A repair proposal with adequate supporting documents showing that the repair will fully reinstate the structural integrity of the VAC-A-TEE clean-out will be submitted by the Contractor to the Engineer for review and approval prior to starting the repair of any found defects.

C. Once the repair has been installed by the Contractor, the sewer will have its warranty period extended one year from the date the repair was accepted by the Engineer. The Contractor will re-inspect the pipe again prior to the expiration of it's warranty period in accordance with Section 33 01 30.16 at no additional cost to the Owner.

D. The Owner may perform warranty inspections with its own personnel or personnel independent of the installation Contractor.

PART 2 - PRODUCTS

2.01 PVC SADDLE

A. One-piece, molded PVC saddle compatible with the riser pipe.

B. The saddle shall conform to the lateral pipe by a snap fit where the lateral pipe is either four (4") or six (6") in diameter.

2.02 RISER PIPE

A. SDR 35 PVC for riser depths less than 13' below grade or SDR 26 PVC for riser depths equal to or greater than 13' below grade. Riser pipe shall be one piece between the saddle and the cleanout cap.

2.03 SOLVENT WELDER

A. Solvent welding the riser pipe into the saddle boss.

2.04 RESIN

A. Marine-grade, one-part adhesive/sealant applied to underside of saddle.

2.05 CLEANOUT CAP

A. Approved cleanout cap shall be a gasketed or solvent weld cap with countersunk screw on plug sized to be affixed to 6" PVC pipe and approved by the Engineer. In locations where cleanout cap must be placed in drive aprons, a heavy duty traffic rated C.I. or D.I. cleanout assembly shall be used and approved by the Engineer.

PART 3 - EXECUTION

3.01 INSTALL LOCATION

A. Locate sewer lateral pipe by the most effective means available to the installer.

B. The most common method utilized and associated with the Vacuum inserted sewer clean-out installation process consists of inserting a video camera with an internal sonde into the lateral service line from the mainline pipe. Locating the lateral pipe is accomplished using a locating receiver.

C. The located lateral pipe shall be marked by driving a steel pin in the soil when possible and marking the surface with marking paint and a marking flag.

3.02 SITE PREPARATION

A. In grass areas, neatly cut and remove sod.

B. If approved by Engineer, in pavement areas, straight-line mark, sawcut, and remove pavement.

3.03 VACUUM EXCAVATION BOREHOLE

A. Vacuum excavate a borehole approximately twenty (20) inches in diameter. Deposit all spoils in a vacuum truck.

3.04 ASSEMBLY AND INSTALLATION

A. Solvent weld a riser pipe of appropriate length to the saddle.

B. Apply adhesive/sealant to the underside of the saddle at not less than a 1/4-inch thick layer.

C. Carefully insert the saddle and riser pipe into the borehole; set the saddle onto the lateral pipe.

D. Apply downward force causing the saddle to expand and snap onto the lateral pipe such that the saddle surrounds more than 50% of the pipe diameter, passing the spring line and retracting to fully engage.

E. Immediately backfill the annular space between borehole and riser pipe with sand or pea gravel to within six (6) inches of the surface grade.

F. Install an approved cleanout cap at grade as specified.

3.05 TESTING AND CUTTING

A. Exfiltration test: Fill the riser pipe with a six (6) foot column of water no less than twelve (12) hours after affixing the saddle; hold for five (5) minutes; measure water level from the top of the riser; zero leakage allowed.

B. Introduce a diamond core saw into the riser pipe; cut the crown of the lateral pipe; remove the coupon.

3.06 DEVIATIONS

A. If soil conditions such as running sand prohibit installation, terminate installation and fill the borehole with flowable grout. Restore the surface area to its original condition.

3.07 CLEANUP

A. Leave the site clean and restore property to conditions equal to those prior to Vacuum inserted sewer clean-out installation.

3.08 FINAL ACCEPTANCE

A. Upon completion, deliver video documentation of the completed work to the Owner for review and acceptance.

END OF SECTION

SECTION 33 30 00

SANITARY SEWERAGE UTILITIES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide gravity sanitary sewer repair where directed by the Engineer after pre-liner prep CCTV review is complete to municipal sewers or other discharge system as indicated and in compliance with Contract Documents.

1.02 REFERENCES:

A. ASTM International (ASTM):

1. C12: Standard Practice for Installing Vitrified Clay Pipe Lines.

2. C14/14M: Standard Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.

3. C76/76M: Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.

5. C425: Standard Specification for Compression Joints for Vitrified Clay Pipe and Fittings.

6. C443/443M: Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.

7. C478: Precast Reinforced Concrete Manhole Sections.

8. C700: Standard Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.

9. C828: Standard Test Method for Low-Pressure Air Test of Vitrified Clay Pipe Lines.

10. C923: Resilient Connectors Between Reinforced Concrete Manhole Structures.

11. C924/C924M: Testing Concrete Pipe Sewer Lines by Low-Pressure Air Test Method; American Society For Testing And Materials.

12. D638: Standard Test Method for Tensile Properties of Plastics.

13. D648: Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.

15. D790: Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

16. D1785: Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

17. D2241: Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).

18. D2321: Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.

19. D2583: Standard Test Method for Indentation Hardness of Rigid Plastics by Means of a Barcol Impressor.

21. D2729: Standard Specification for Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

22. D2751: Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Sewer Pipe and Fittings.

23. D3034: Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

24. D3139: Standard Specification for Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.

25. D3212: Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.

27. F477: Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

F. Occupational Safety and Health Administration (OSHA) Standards and Regulations:

1. 29 CFR 1926, Subpart P: Safety and Health Regulations for Construction, Excavations.

H. UNI-BELL (UNI):

1. B6: Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe; UNI-Bell PVC Pipe Association.

1.03 DEFINITIONS:

A. Appurtenances: Additional piping items to provide a complete piping system suitable to convey wastewater as specified and intended. These items may or may not be specified, but are necessary to complete the piping system.

B. Standard Specifications: “Ohio EPA Greenbook, current edition.”

1.04 SUBMITTALS:

A. Submit the following in accordance with Section 01 33 00.

1. Pipe materials.

2. Pipe fittings.

3. Pipe couplings.

4. Accessories.

5. Appurtenances.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Instructions: Provide manufacturer's installation instructions for pipe.

D. Field Test Reports: Provide results for all testing performed as indicated in Subparagraph – Field Testing.

E. Project Record Documents: Provide marked-up set of drawings showing actual locations of piping, valves, connections, thrust restraints, and invert elevations. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.05 QUALITY ASSURANCE:

A. Comply with the requirements specified in Section 01 43 00.

B. Perform Work in accordance with City of Elyria standards and Ohio EPA standards.

1.06 DELIVERY STORAGE AND HANDLING:

A. Comply with the requirements specified in Section 01 66 10.

B. Deliver and store valves in shipping containers with labeling in place.

1.07 WARRANTY:

A. Provide standard product warranties for all sanitary sewerage utility materials and as required by City of Elyria standards.

PART 2 - PRODUCTS

2.01 GRAVITY SANITARY SEWER PIPE:

B. Polyvinyl Chloride (PVC) Pipe: ASTM D3034, SDR 26 (for depths greater than or equal to 13 feet below grade), & SDR 35 (for depths less than 13 feet below grade), Polyvinyl chloride (PVC) material; inside nominal diameter as indicated, integral bell elastomeric gasketed joint.

2.02 BEDDING AND COVER MATERIALS:

A. As specified in Section 31 23 00.

2.03 ACCESSORIES:

A. Shielded Flexible Couplings: Sleeve type elastomeric polyvinyl chloride with shielding held firmly to pipe ends by screw-tightened bands. Bands, shielding, and screws Type 304 stainless steel.

2.04 APPURTENANCES:

A. Provide all necessary appurtenances for a full and complete piping system suitable for operation, and in conformance with Project Documents.

2.05 SHOP TESTING:

A. Test all pipes and valves per manufacturer requirements, and as required by pertinent Standards.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Verify that trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated for sanitary sewer pipe.

3.02 PREPARATION:

A. Sanitary sewer pipe: Hand trim excavations to required elevations. Correct over excavation with bedding material. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.

B. Remove defective existing sanitary sewer pipe where directed by the Engineer via saw cutting. Dispose removed material offsite.

3.03 SANITARY SEWER PIPE INSTALLATION:

A. Maintain separation of sanitary sewers pipe and water mains of at least 10 feet horizontal and 18 inches vertical.

B. Install pipe, fittings, and accessories in accordance with ASTM D2321 and manufacturer's instructions. Seal joints watertight.

C. Lay pipe to slope indicated; with maximum variation from true slope of 1/8-inch in 10 feet. Lay pipe upgrade, with spigot ends pointing in direction of flow. Lay pipe to form a close concentric joint with adjoining section and to prevent sudden offsets in flow line.

D. Install bedding to depths and dimensions as indicated in the details provided.

E. Backfill each section of pipe as it is laid, as specified in Section 31 23 00 and as indicated at least up to centerline, before next joint is made. Do not completely conceal or bury pipe prior to being tested for water tightness and prior to being accepted by the Engineer. Do not displace or damage pipe when compacting.

F. Clear the interior of the pipe of dirt and superfluous materials as the work progresses. Keep a suitable swab or drag in the pipe and pull it forward past each joint immediately after the jointing has been completed.

G. Keep trenches and other excavations free of water until final inspection. Do not lay pipe or construct masonry work in water. Do not allow water to rise over the work until concrete or mortar has had ample time to set.

H. Close open ends of pipe and fittings in a manner acceptable to the Engineer when the work is not in progress so that trench water, earth and other substances will not enter the pipe or fittings.

I. Handle pipe and fittings to avoid damage. Carefully inspect pipe and fittings for defects before lowering into the trench.

J. Where necessary deflect pipelines to avoid obstructions or where long-radius curves are indicated. Do not exceed the maximum deflection recommended by pipe manufacturer. Provide short sections of pipe as necessary to maintain required line.

K. Provide compatible pipe connections to each valve and to equipment. Provide unions on pipelines with welded soldered or threaded joints to allow removal of each valve and equipment without disturbing connecting pipelines. Connect different types of pipe and accessories with flexible couplings or pipe and accessories with flexible couplings or accepted transition fittings. Provide insulation fittings where ferrous pipe connects to nonferrous metallic pipe.

L. Verify invert of each existing manhole prior to commencing work. Connect to each existing manhole where indicated or directed. Prevent debris from entering the pipelines. The work includes all necessary concrete work, cutting and shaping of invert.

M. Repair linings, coatings and coverings damaged during construction with accepted materials equal to and compatible with original lining, coating or covering. Repair damaged galvanizing with zinc-rich paint.

N. Connect to existing municipal sewer system as indicated.

3.04 REPAIR/RESTORATION:

A. Repair any existing utilities/structures, or features damaged during installation of sanitary sewerage utilities to Owner's satisfaction, and at no cost to Owner.

3.05 FIELD TESTING:

A. General:

1. Request inspection by Owner's Representative prior to and immediately after placing bedding.

B. Cleaning and Testing

1. Testing for sewer point repairs that do not extend from manhole to manhole shall be waived and visual inspection shall be accepted.

2. CCTV inspection shall be performed post installation to confirm final condition, no damage occurred during backfill and compaction, and pipe is free of debris. Damaged pipe shall be replaced at the contractor's expense. Any inspected sewers showing ponding water greater than 1/2" has failed to meet requirements and must be replaced and re-inspected.

3.06 ADJUSTING:

A. Coordinate with Engineer for any field adjustments. The Engineer reserves the right to reject any field adjustments.

3.07 PROTECTION:

A. Protect sanitary sewerage utilities from damage throughout storage, installation, testing, and final acceptance.

3.08 CLOSEOUT ACTIVITIES:

A. Provide in accordance with Section 01 77 00.

END OF SECTION

SECTION 33 34 35

FLOW CONTROL

PART 1 - GENERAL

1.01 DESCRIPTION:

A. This Specification shall cover flow control measures required for main line sewer and sewer services required to perform the work.

PART 2 - PRODUCTS

2.01 METHODS:

A. Provide necessary flow control measures for the main line sewer and sewer services required to perform the work. Diversion of wastewater flow directly or indirectly to the environment, land drainage sewers, or storm relief sewers will not be allowed.

B. Maintain existing sewer flows from upstream sewers during construction around the sewers being lined.

C. Where bypass pumping combined sewer flows, the Contractor shall provide a minimum pumping capacity of 2.75 times the estimated average day flows.

D. Erection of scaffolding overtop of active roadways will not be permitted for the purposes of flow control.

E. Provide adequate temporary bypass pumping for live sewer services connected to the sewer being lined from when the service is blocked off until it is reinstated.

F. Provide security personnel for locations where by-pass pumping requires normally secure or locked doors and access areas to be left open or unlocked.

G. Ensure all flow control components and materials are removed from the sewer system upon completion of the work.

H. The Contractor shall put in place measures to prevent the spill of wastewater and styrene laden water from the CIPP installation process to the environment. When working near outfalls, the Contractor shall ensure flow bypass methods prevent upstream levels from exceeding overflow levels. Where plugs and other methods are employed to prevent overflows, the Contractor shall have contingency plans in place for unexpected flow increases and undertake 24 hr monitoring of upstream levels while flow control measures are in place.

2.02 FLOW CONTROL PLANS:

A. The flow control plan shall include the following:

1. A description and sketch detailing the arrangement of the proposed flow control measures.

2. A list of the key components required for the flow control measures, including but not limited to the following:

a. Cofferdams

b. Piping or hoses (where required)

c. Pumps (where required)

3. Identify suction and discharge manholes.

4. A detailed procedure for installation and removal of the flow control measures.

5. Monitoring plan (if required). Note: all plans shall include a 24 hr contact person.

6. Means and methods for dealing with excessive flows or wet weather events.

7. Means and methods for bypassing flows from apartment complexes and commercial buildings.

8. Supply of temporary washroom facilities where required.

B. A tabular flow control plans (multiple sewers on a single plan) is acceptable for the following:

1. Wastewater sewer smaller than 12 inches in diameter.

2. Combined sewer 18 inches in diameter and smaller.

C. Flow control plans shall be prepared and stamped by a professional Engineer, registered in the State of Ohio and experienced in the design and implementation of temporary flow bypass works under the following conditions:

1. Wastewater sewer 12 inches in diameter and larger;

2. Combined sewers greater than 18 inches in diameter; and,

3. as specified herein.

D. Additional bypass pumping information and calculations, known herein as supplementary submissions, shall be included in the flow control submission under the following conditions:

1. Sewers up to 24 inches in diameter with flow bypass pumping requirements greater than 50% of their identified maximum capacity identified below, or;

2. Sewers greater than 24 inches in diameter with flow bypass pumping requirements greater than 3.5 MGD.

E. Any flow bypass plan requiring supplementary information shall be submitted individually shall be stamped by a professional Engineer, registered in the State of Ohio and experienced in the design and implementation of temporary flow bypass works.

F. Where supplementary submissions are required, the Contractor shall develop system curves for the flow bypass arrangement demonstrating the ability of the proposed pumping arrangement to meet the identified flow regime for the sewer being bypassed. The submitted calculations shall include the following minimum information:

1. a sketch showing all major components of the flow bypass setup;

2. suction manhole depths;

3. a table showing bypass piping diameters, length, materials, fittings, static lift, etc., used to develop a system curve. The table shall be complete with minor loss coefficients;

4. provision of the system curves plotted with the pump curves, demonstrating the pumping capacity of the proposed system.

PART 3 - EXECUTION

3.01 MAINLINE SEWER FLOWS:

A. The Contractor shall ensure wet weather or excessive flow conditions can be pumped or otherwise accommodated through the work area. The Contractor shall schedule work requiring complete blockage of the sewer when the chances of wet weather events are minimized in accordance with 3.03.

3.02 SEWER SERVICES:

A. Intermittent/short term flow blockages (i.e. up to 1 day, intermittently) of live sewer services will be permitted on the proviso that building occupants are informed of the blockage and adequate steps are undertaken to ensure sewer service backups do not occur. The Contractor shall be responsible for any damages occurring from sewer service blockages in instances where inadequate or improper notice has been provided.

B. The Contractor may expose sewer services for facilities with a high volume of effluent discharge that have no feasible means of intercepting the flow within the building or at a location outside the building and drain or pump the sewer service from that location until the sewer service is reinstated.

3.03 WEATHER

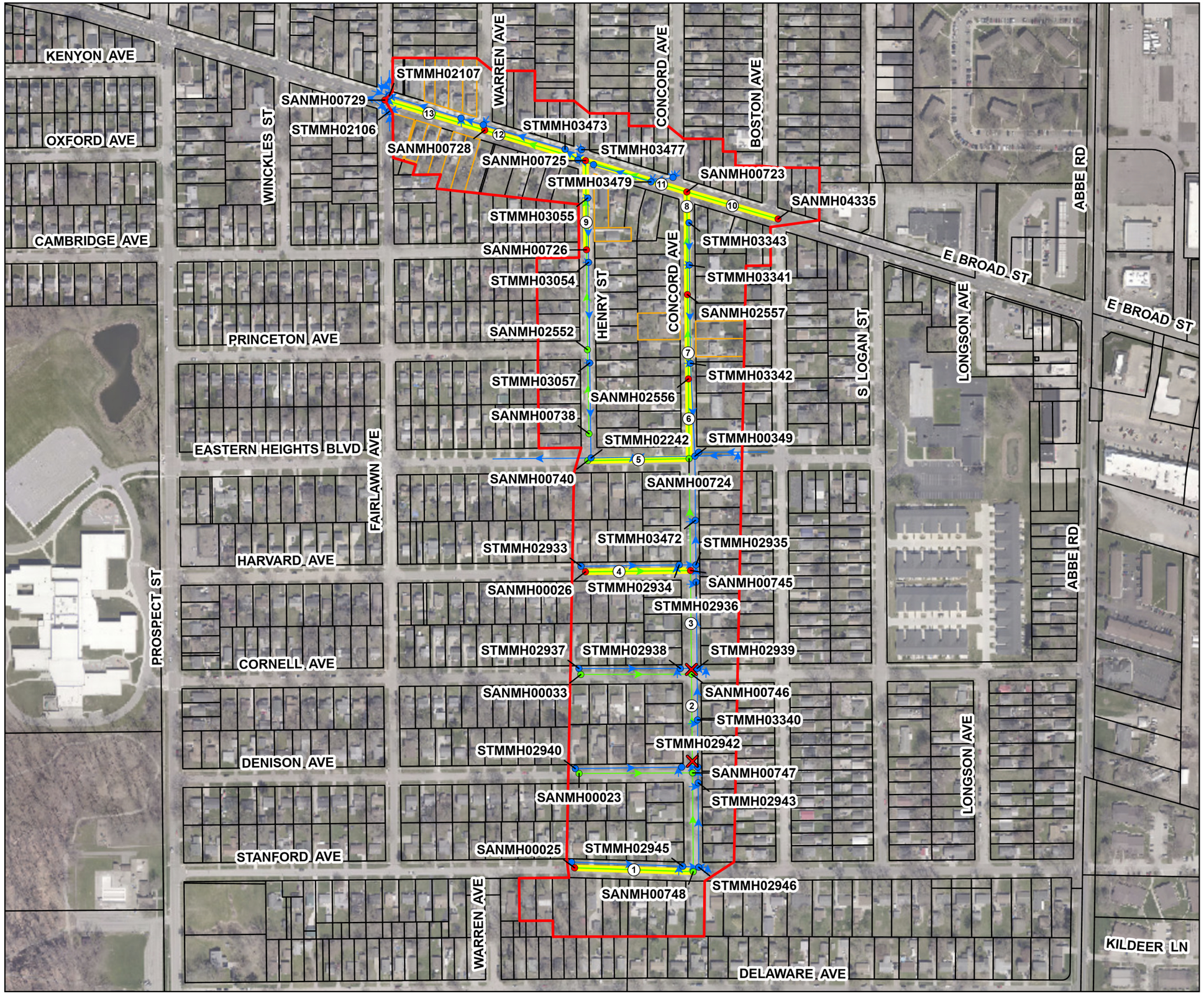
A. Review the weather forecast with the Engineer before each day of liner installation.

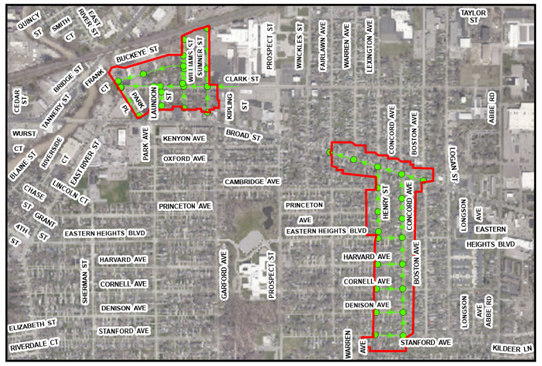
B. Delay installation of liners and/or secure Works when the anticipated weather conditions are such that anticipated sewer flow will exceed the flow control measures provided.

C. The Contractor shall advise immediately of any weather-related delays.

D. The Contractor to schedule Work according to the weather; The City is not responsible for costs associated with weather related delays.

END OF SECTION





Key Map

Legend

- Sanitary Manhole
- Storm Manhole
- Sanitary Sewer
- Storm Sewer
- Parcel
- Project Area
- ① Pipe ID Number

Rehabilitation & Repairs

- Full Segment Repair By Lining
- Internal Point Repair By Lining
- Manhole Rehabilitation
- T-Line Parcel Lateral

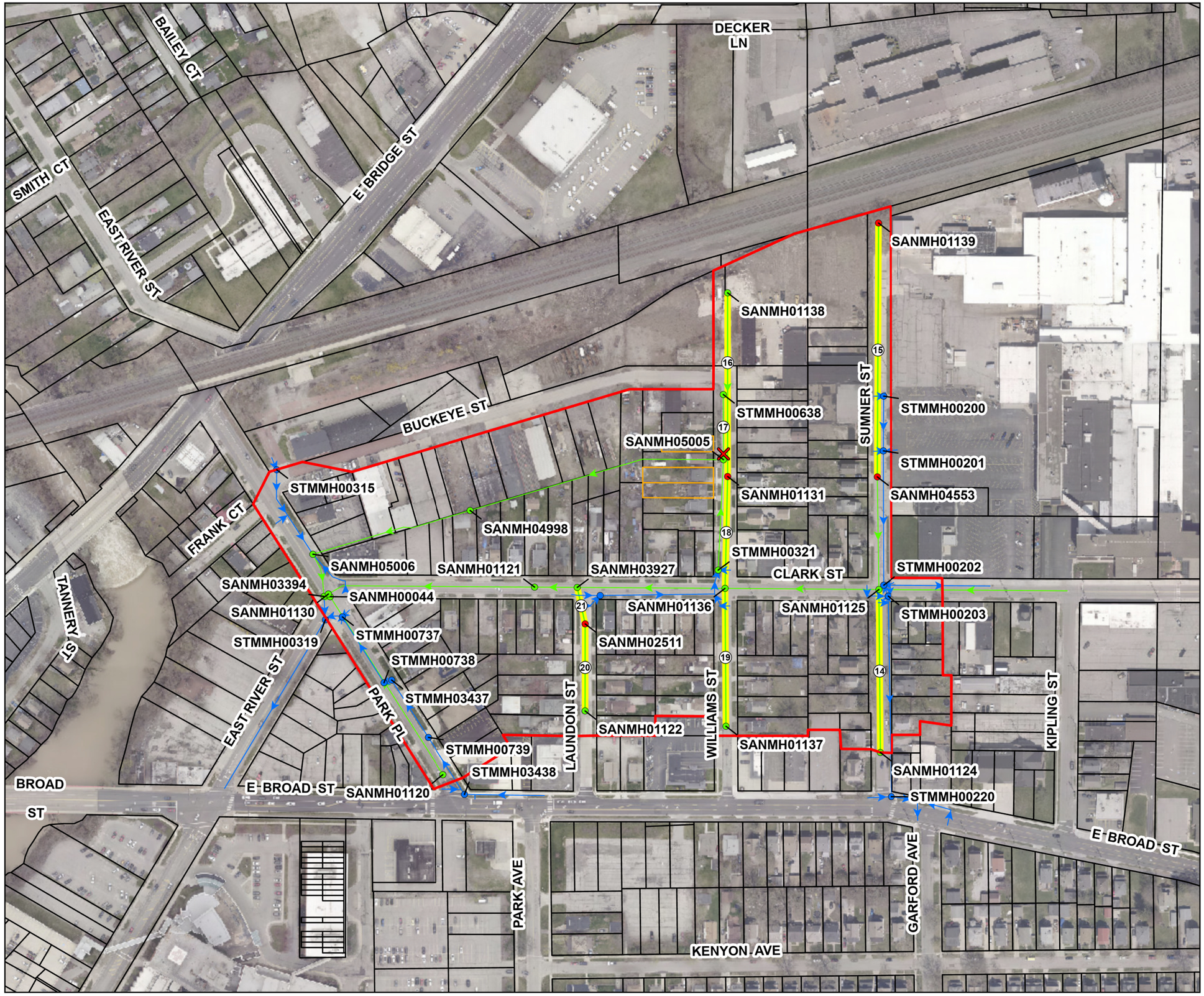
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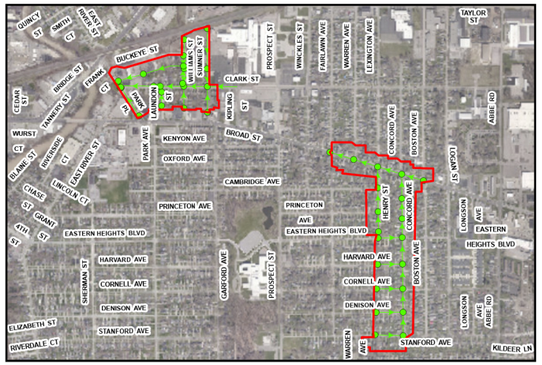
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Figure 1
Rehabilitation Overview Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM





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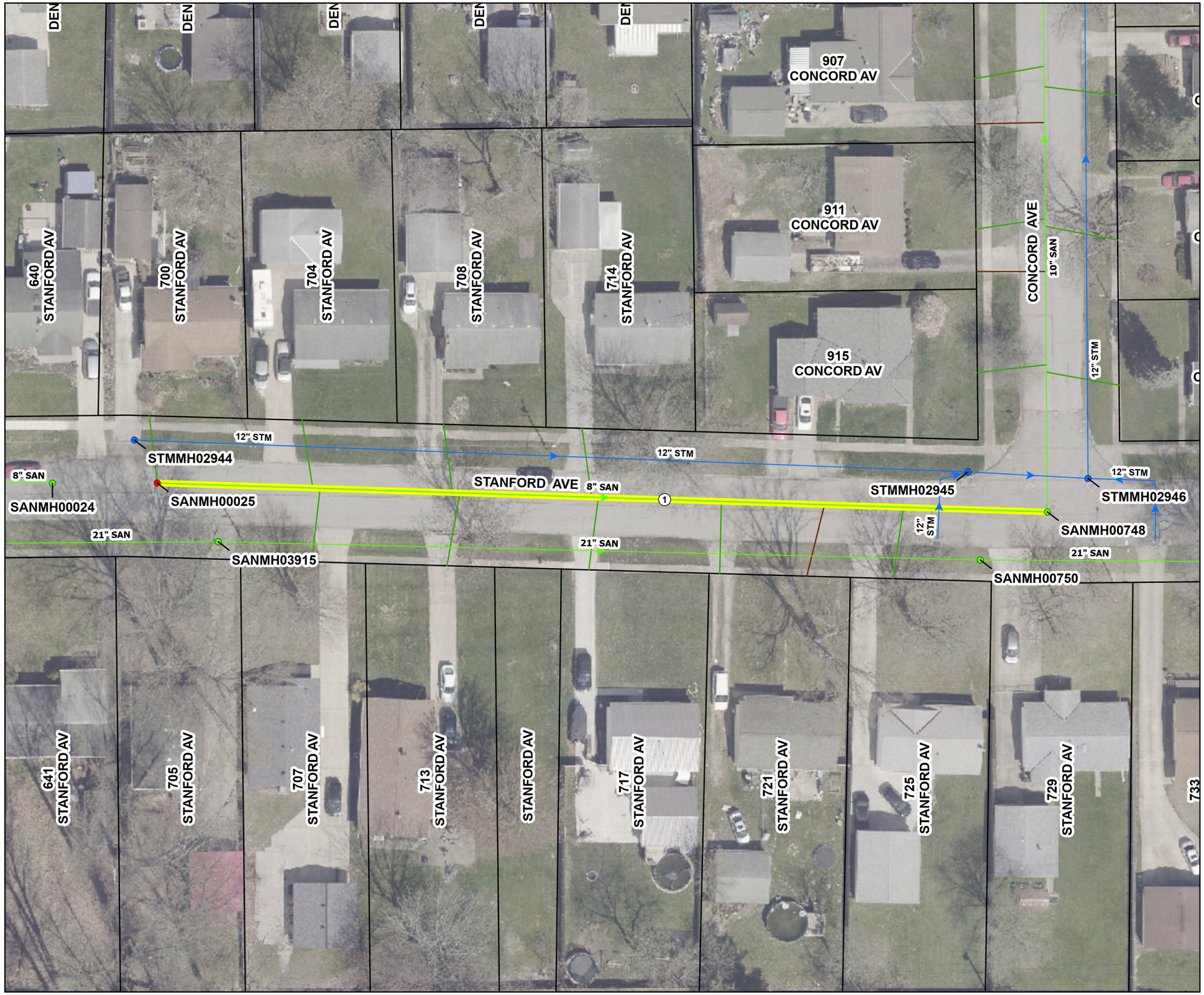
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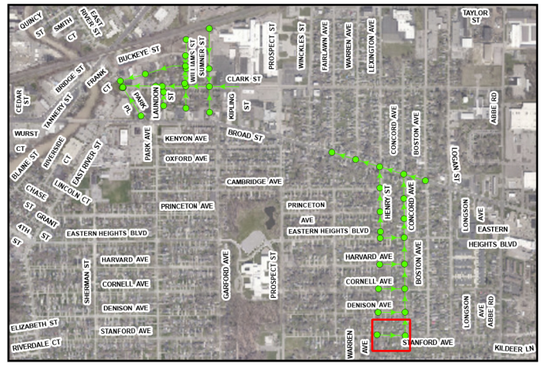
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Figure 1
Rehabilitation Overview Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM





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- Storm Sewer
- Parcel
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- Sanitary Lateral
- Capped/Abandoned Sanitary Lateral
- Suspected Abandoned Sanitary Lateral

Rehabilitation & Repairs

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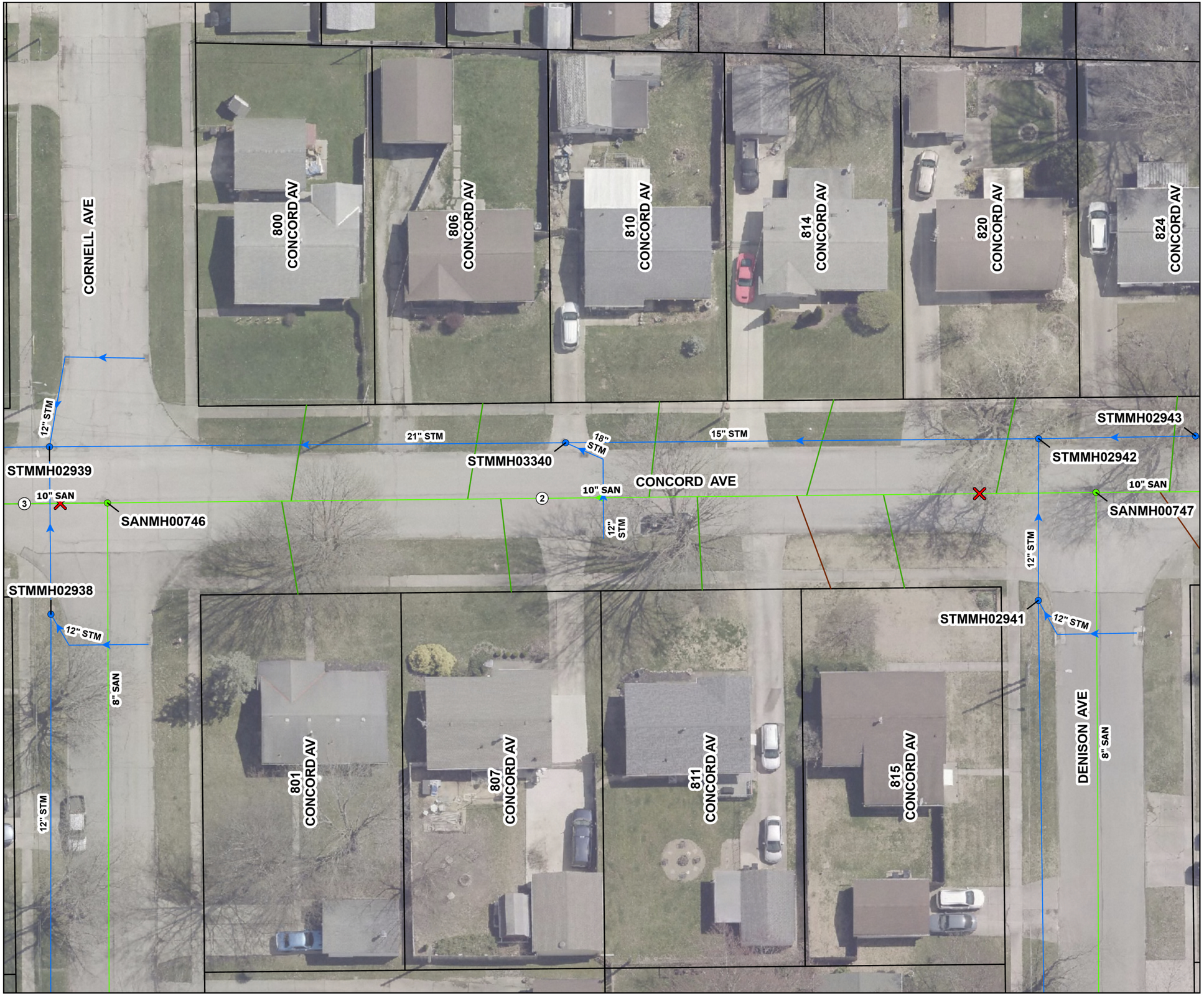
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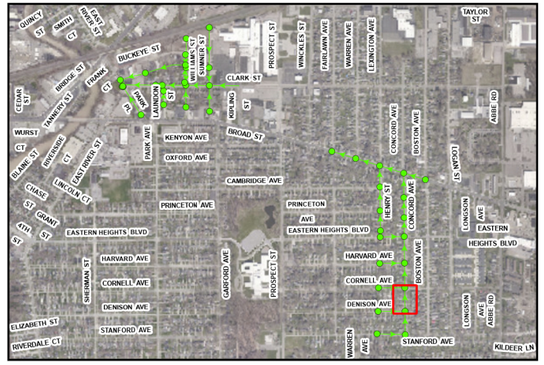
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Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio





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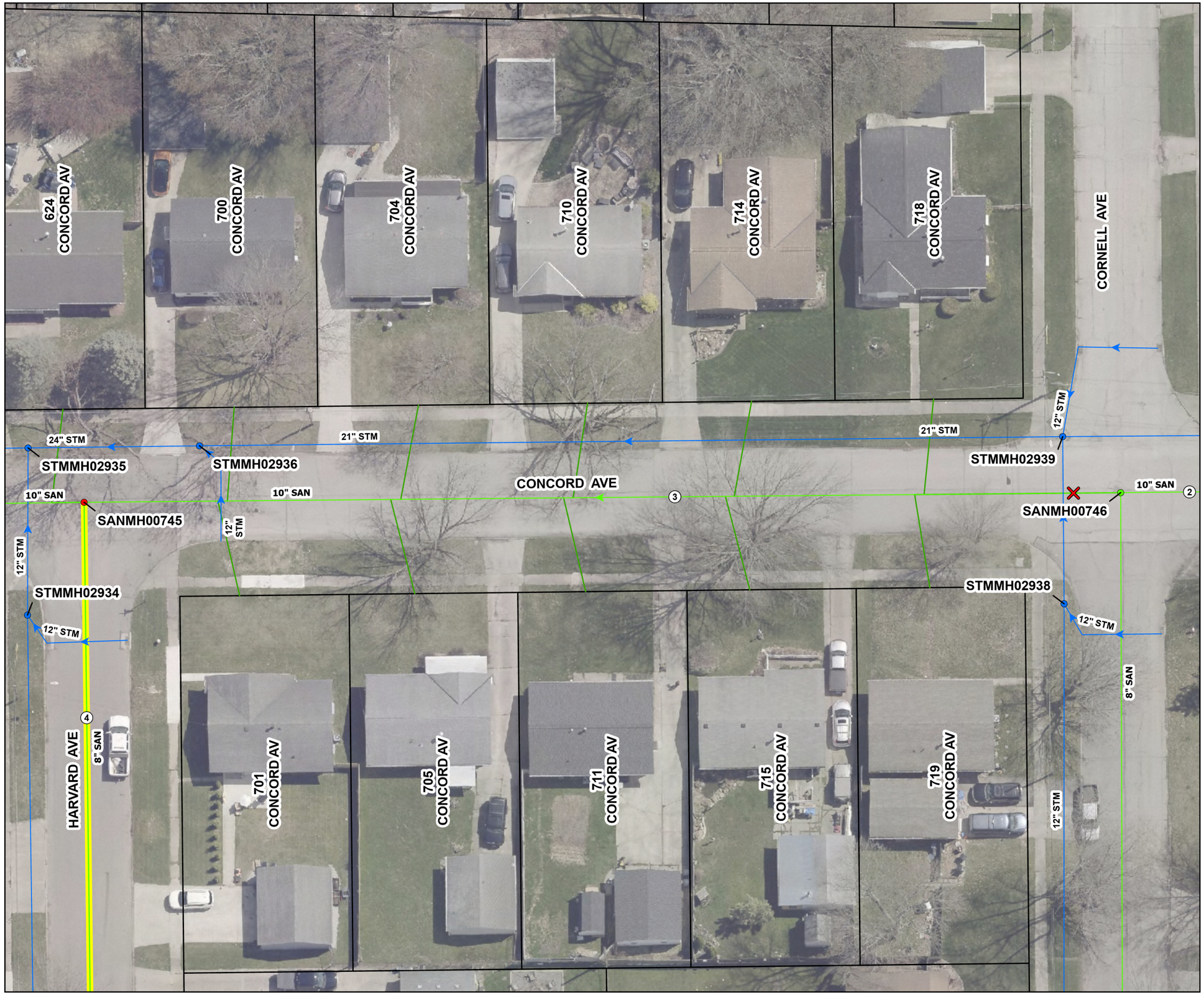
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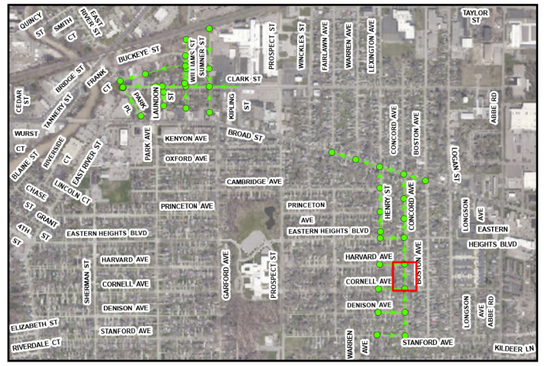
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Figure 2
Rehabilitation Detailed Maps

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Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

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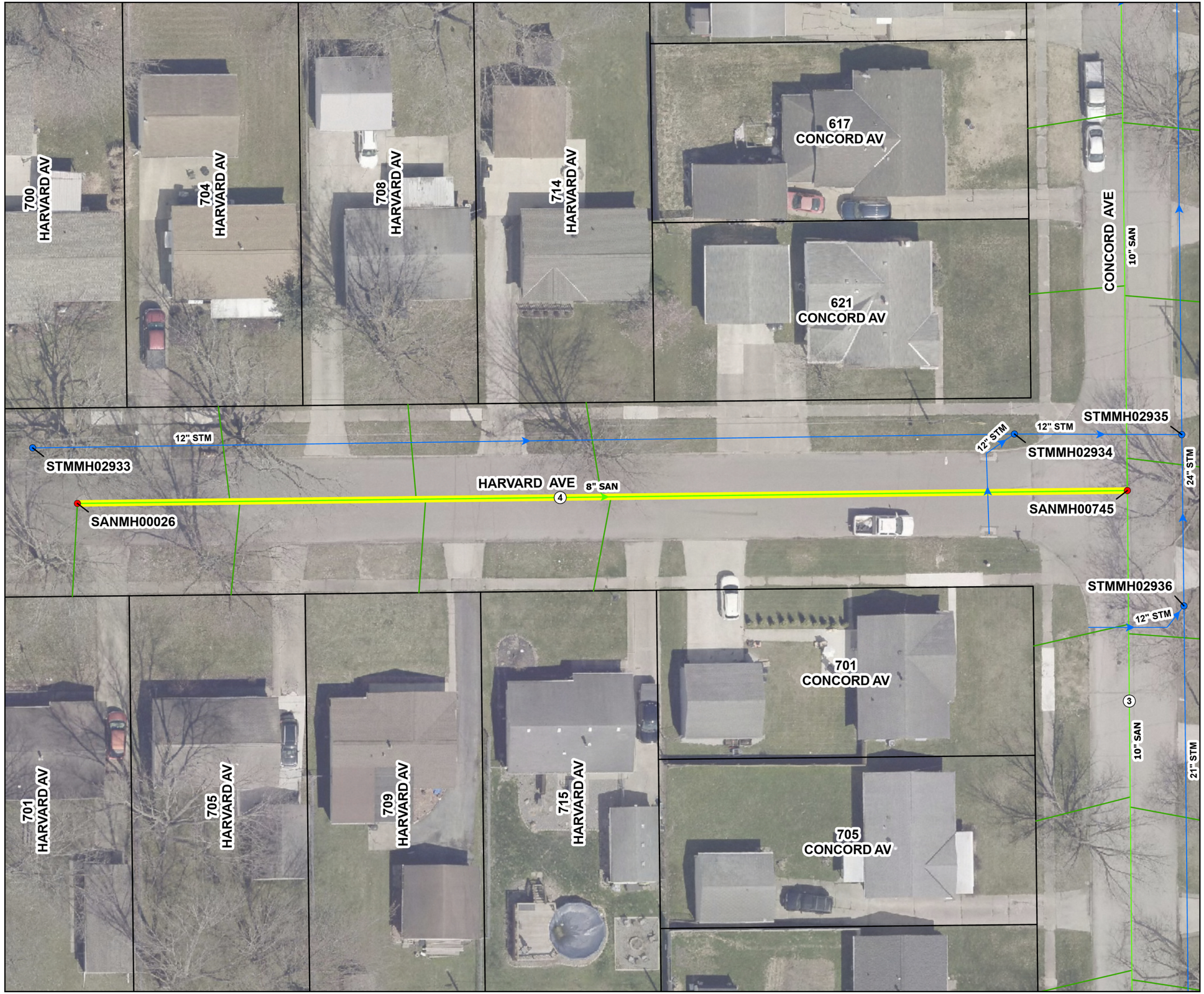
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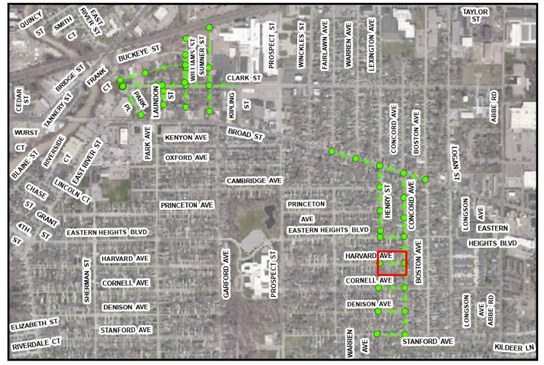
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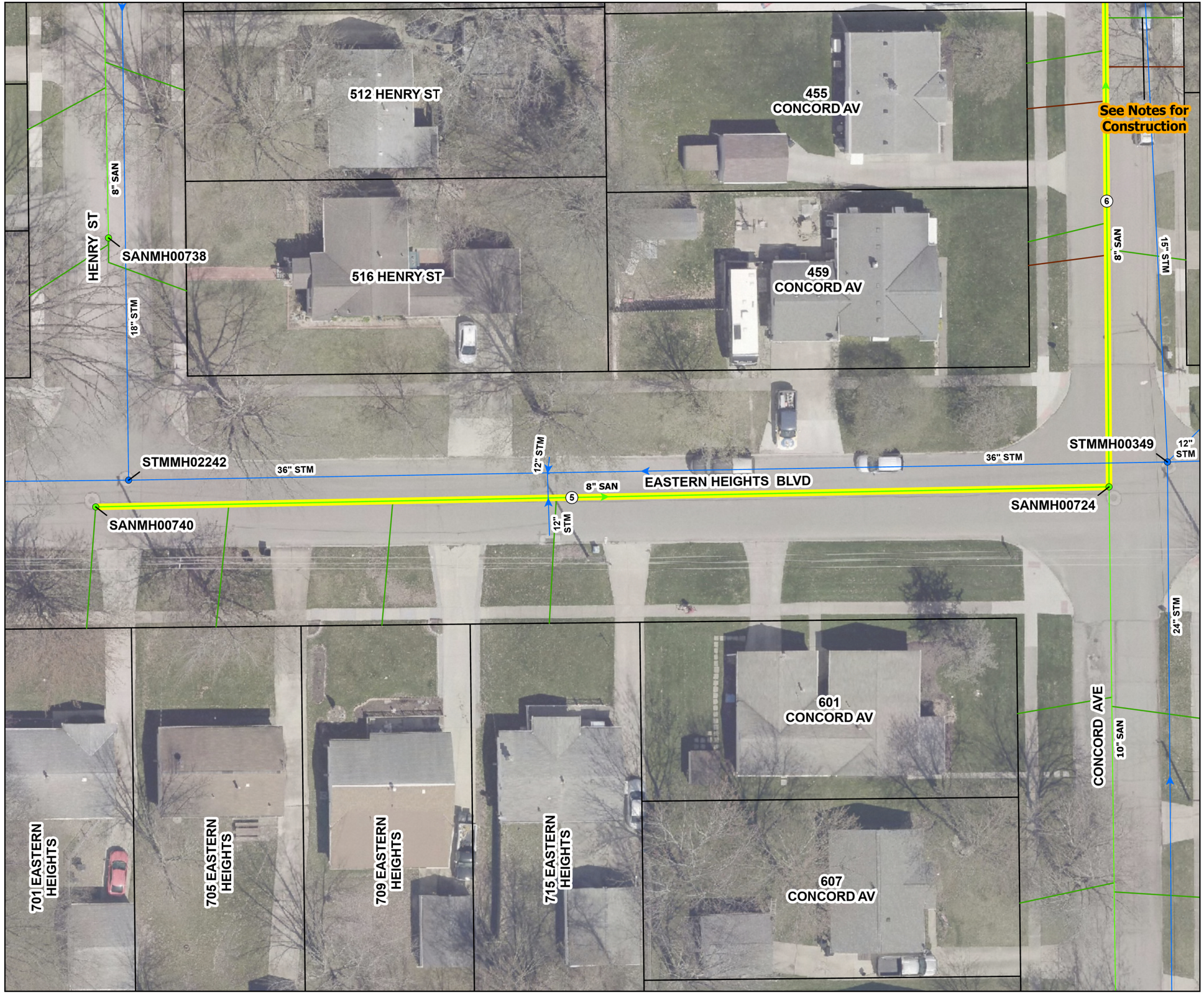
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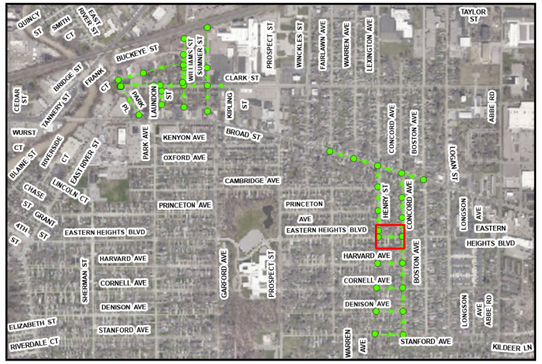
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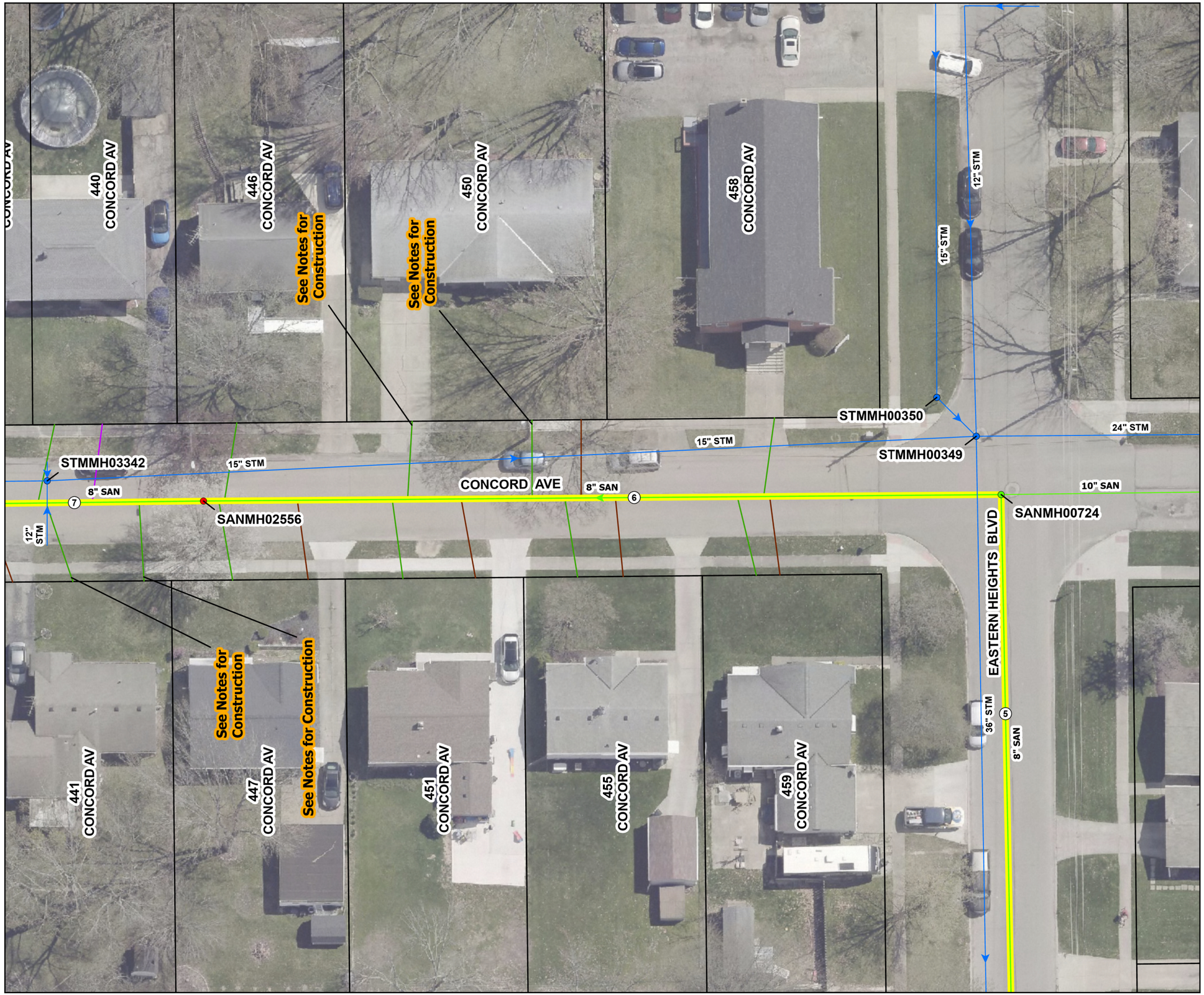
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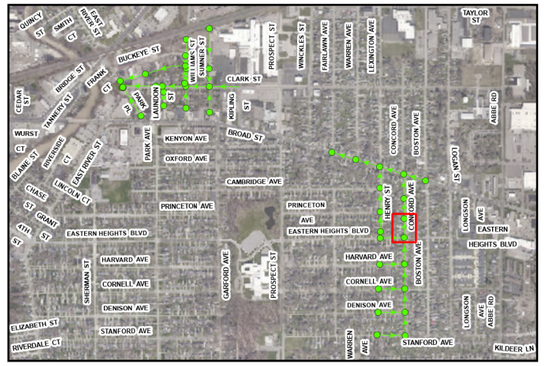
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Phase #1 Sewer Rehabilitation Project
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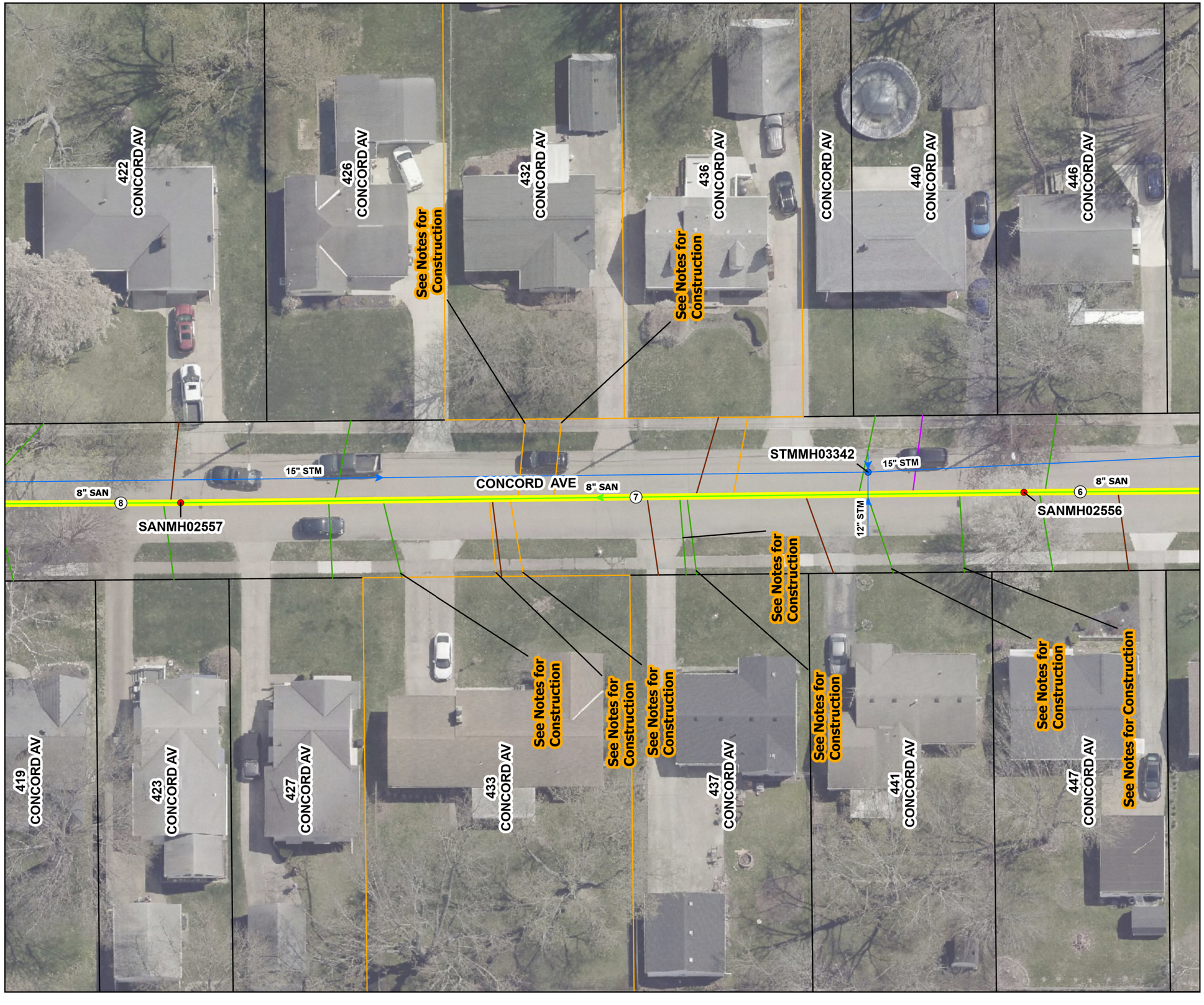
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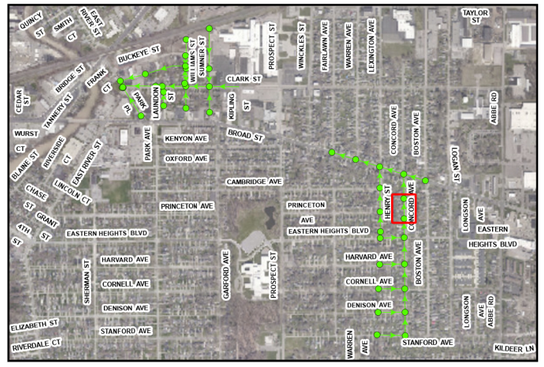
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Phase #1 Sewer Rehabilitation Project
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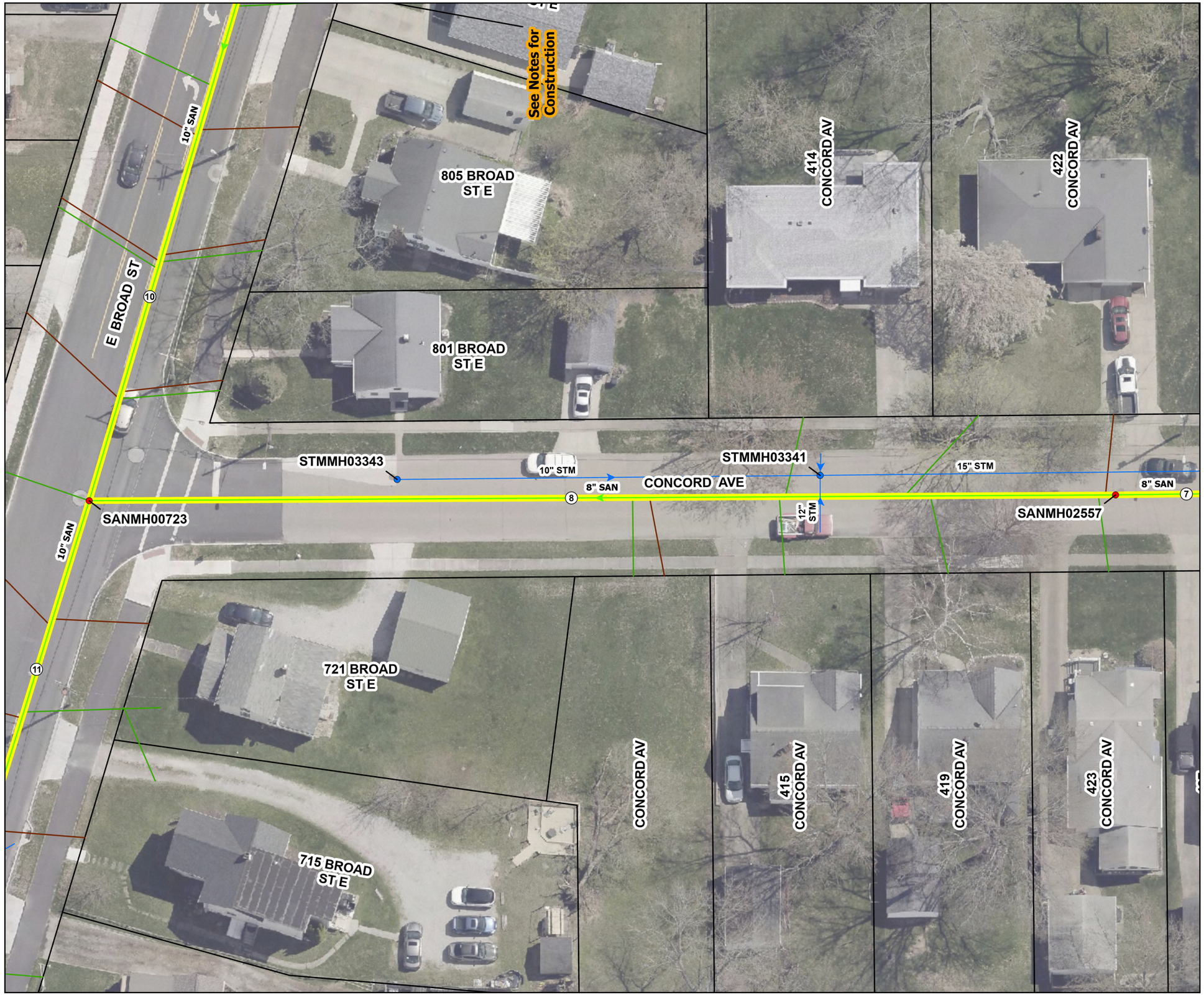
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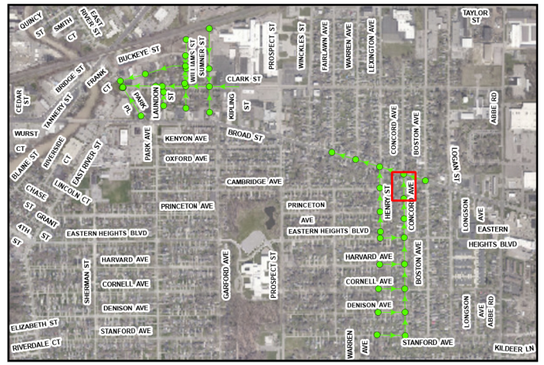
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0 15 30 60 Feet

Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio





Key Map

Legend

- Sanitary Manhole
- Storm Manhole
- Sanitary Sewer
- Storm Sewer
- Parcel
- Pipe ID Number
- Sanitary Lateral
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- Suspected Abandoned Sanitary Lateral

Rehabilitation & Repairs

- Full Segment Repair By Lining
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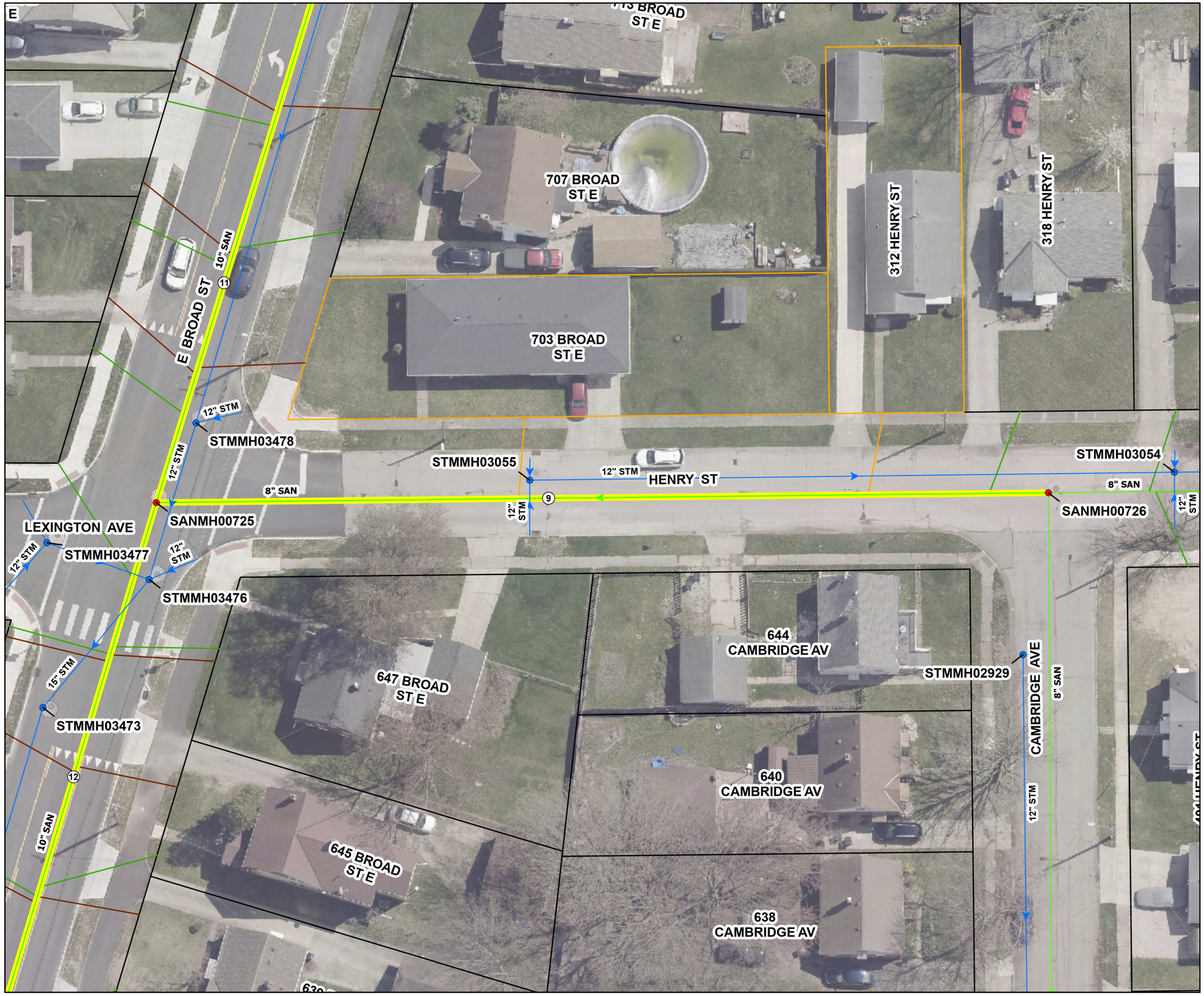
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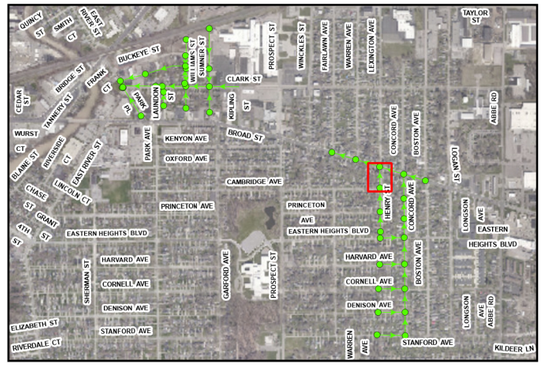
0 15 30 60 Feet

Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM





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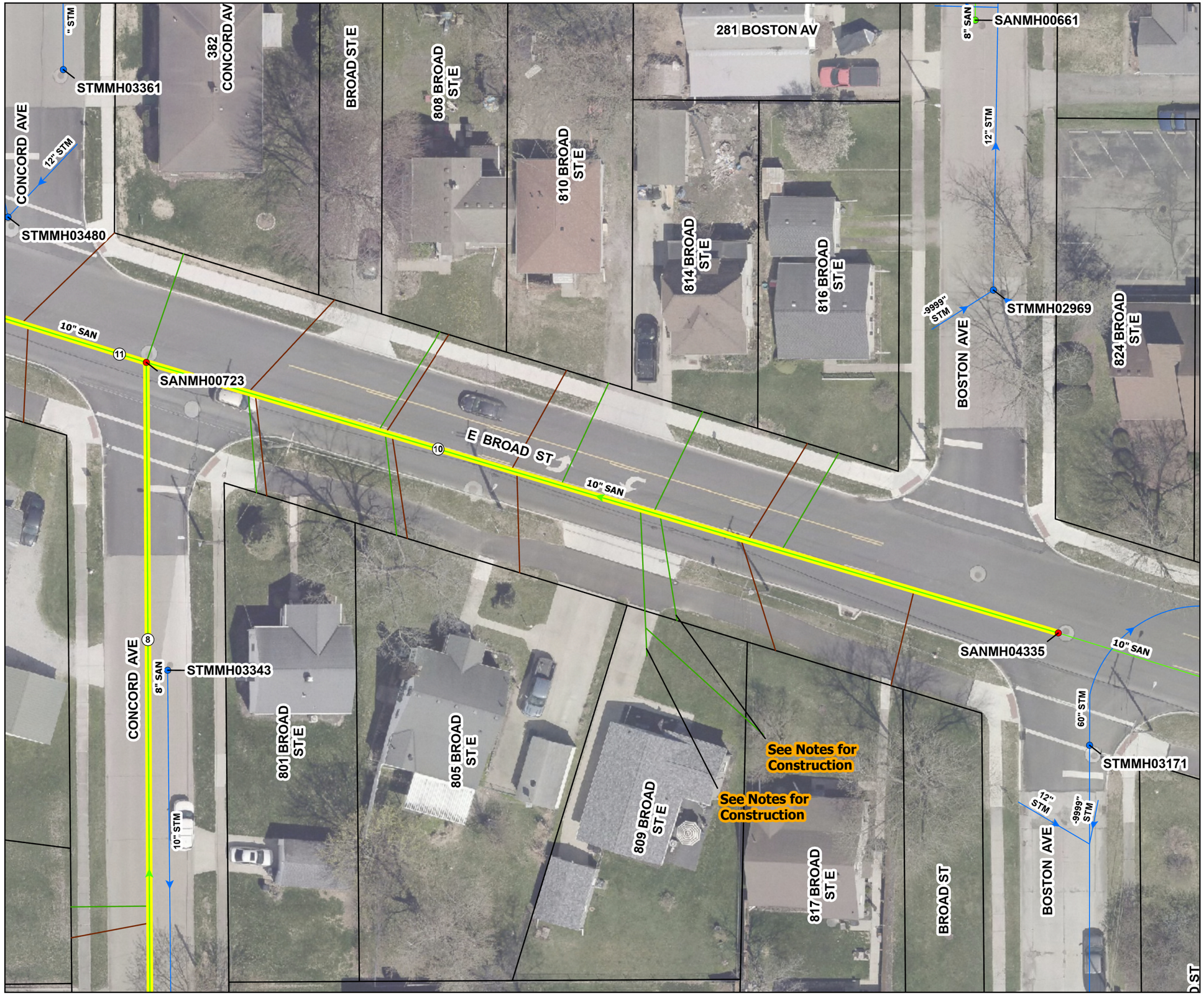
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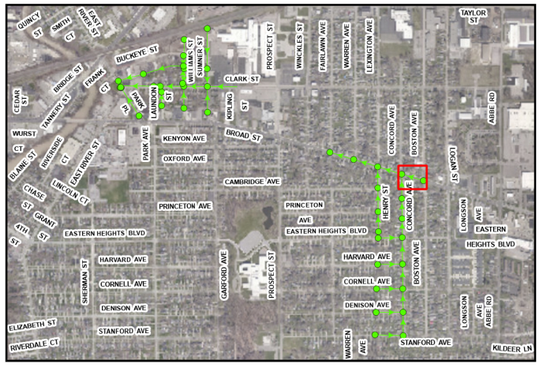
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Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio





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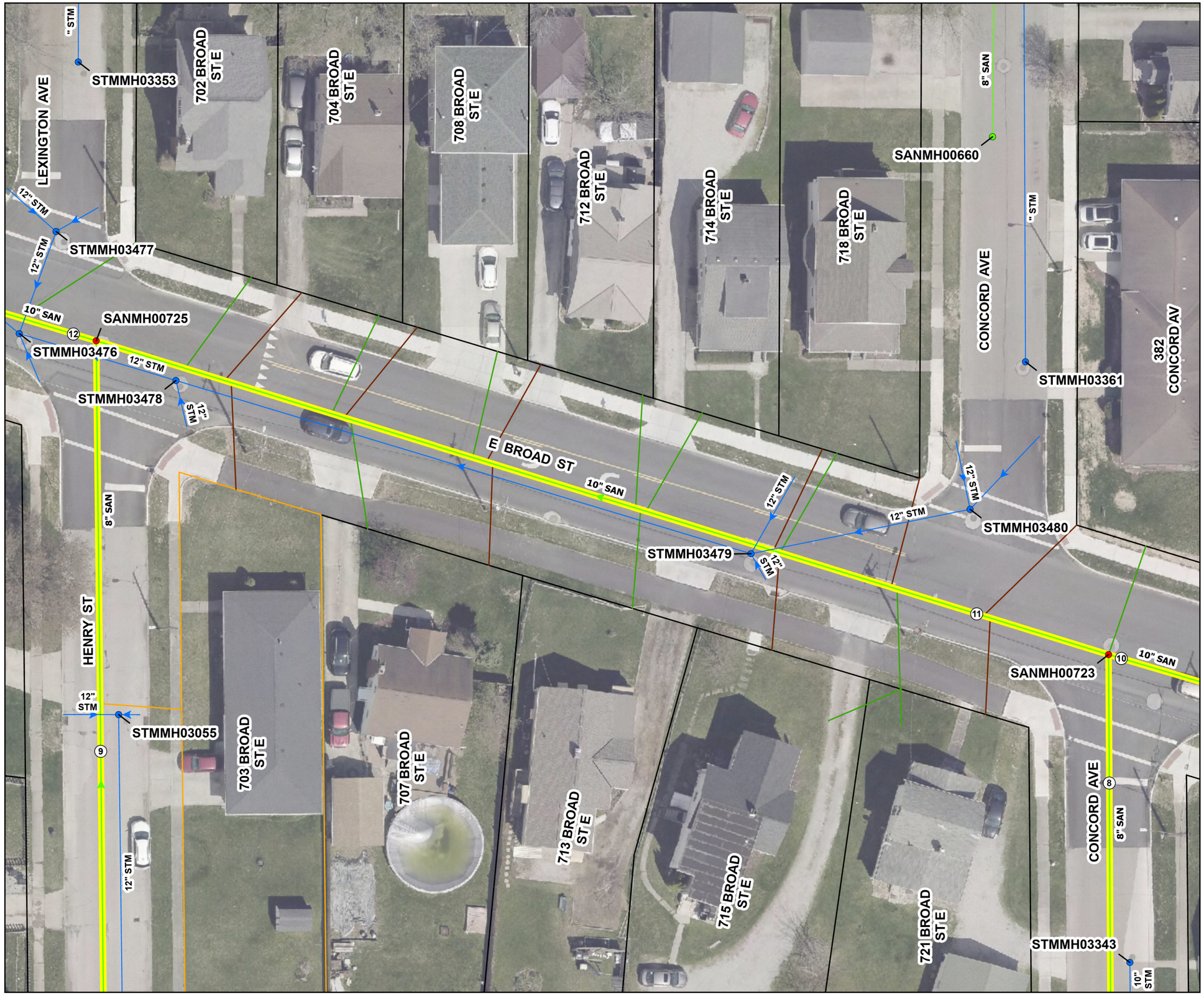
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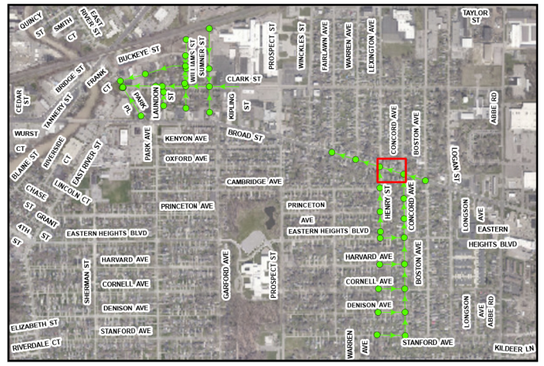
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Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio





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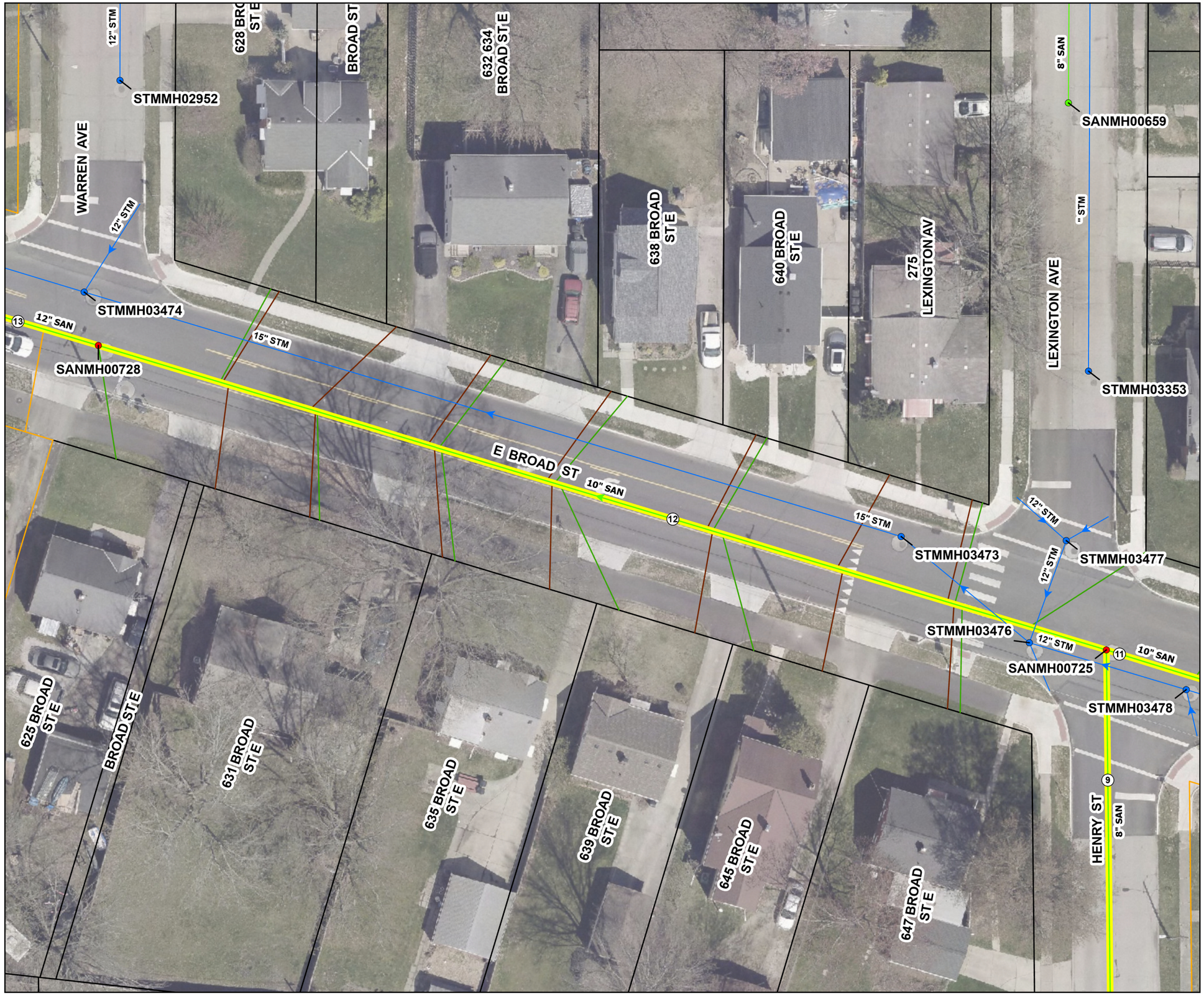
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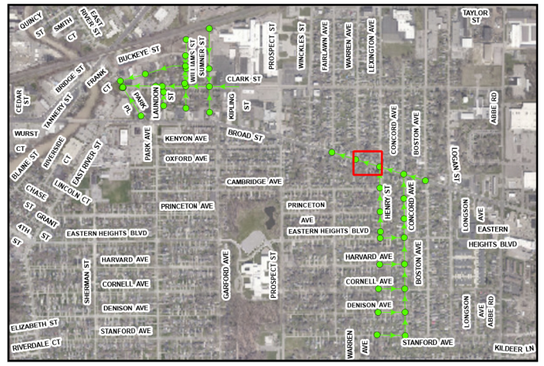
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Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio





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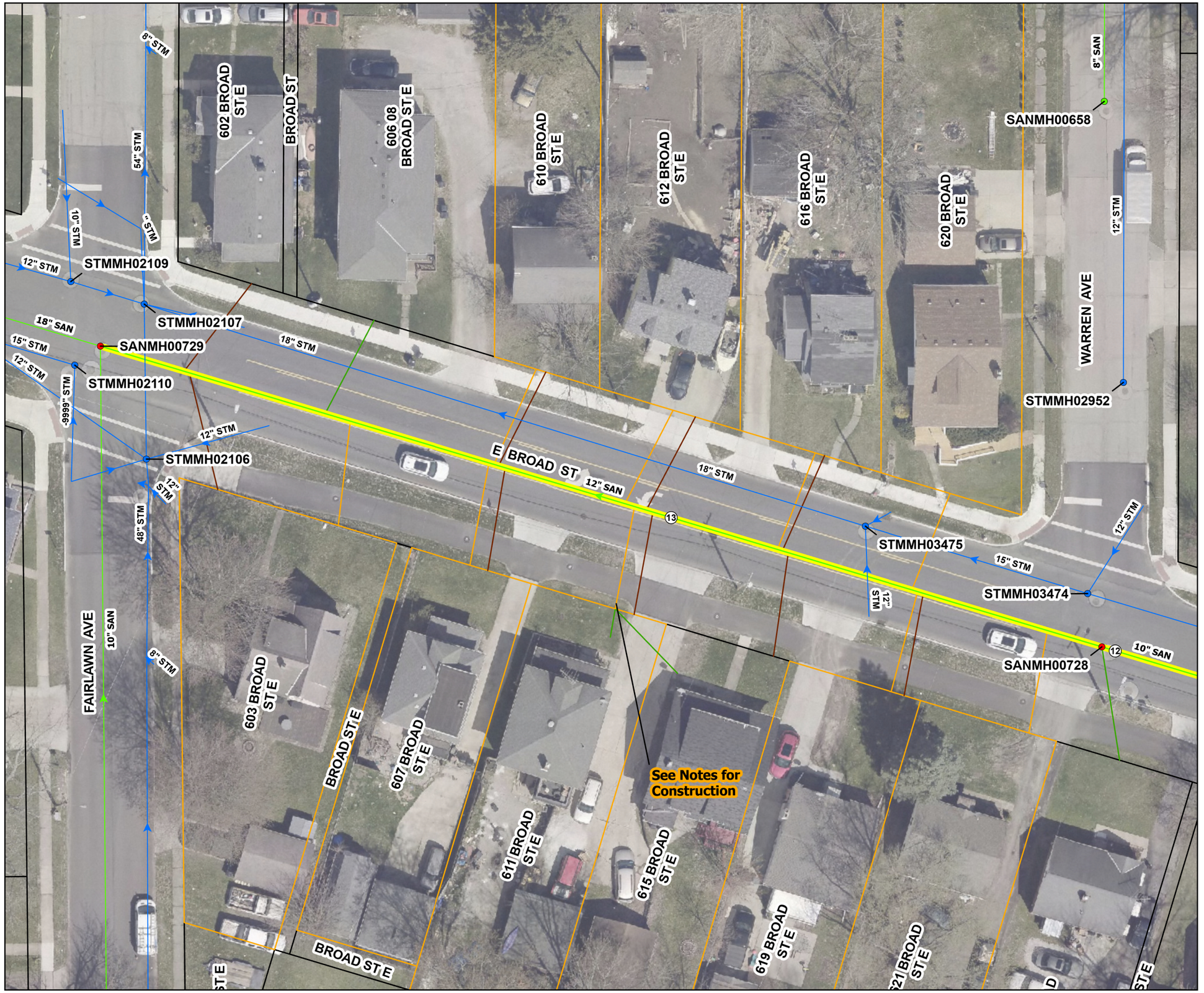
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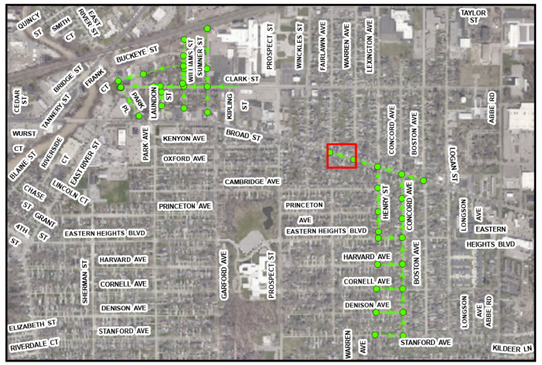
0 15 30 60 Feet

Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM





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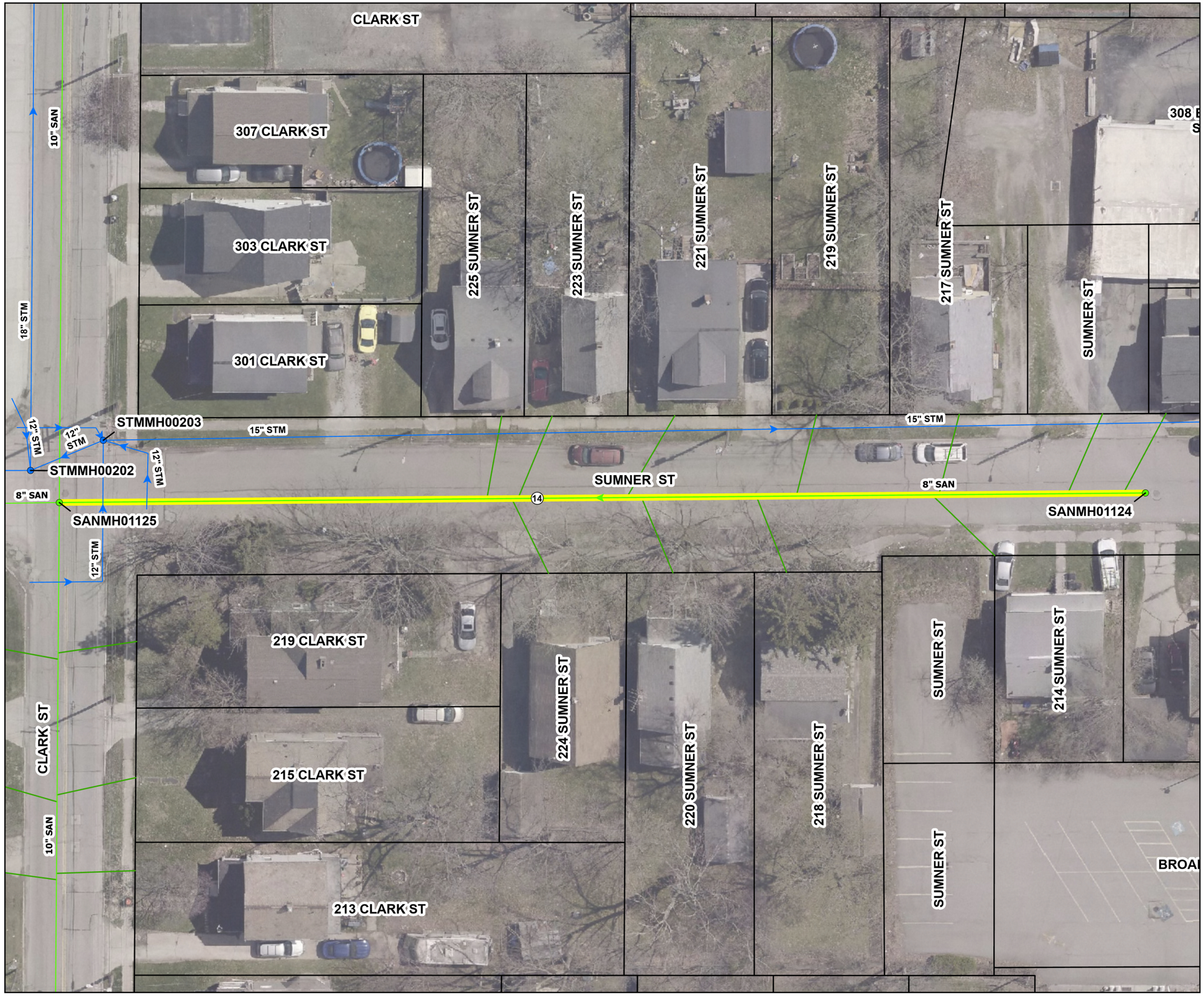
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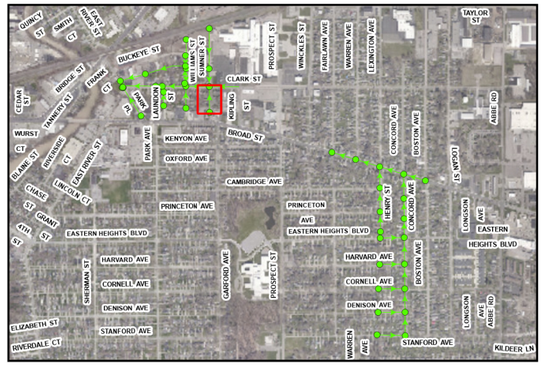
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Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio





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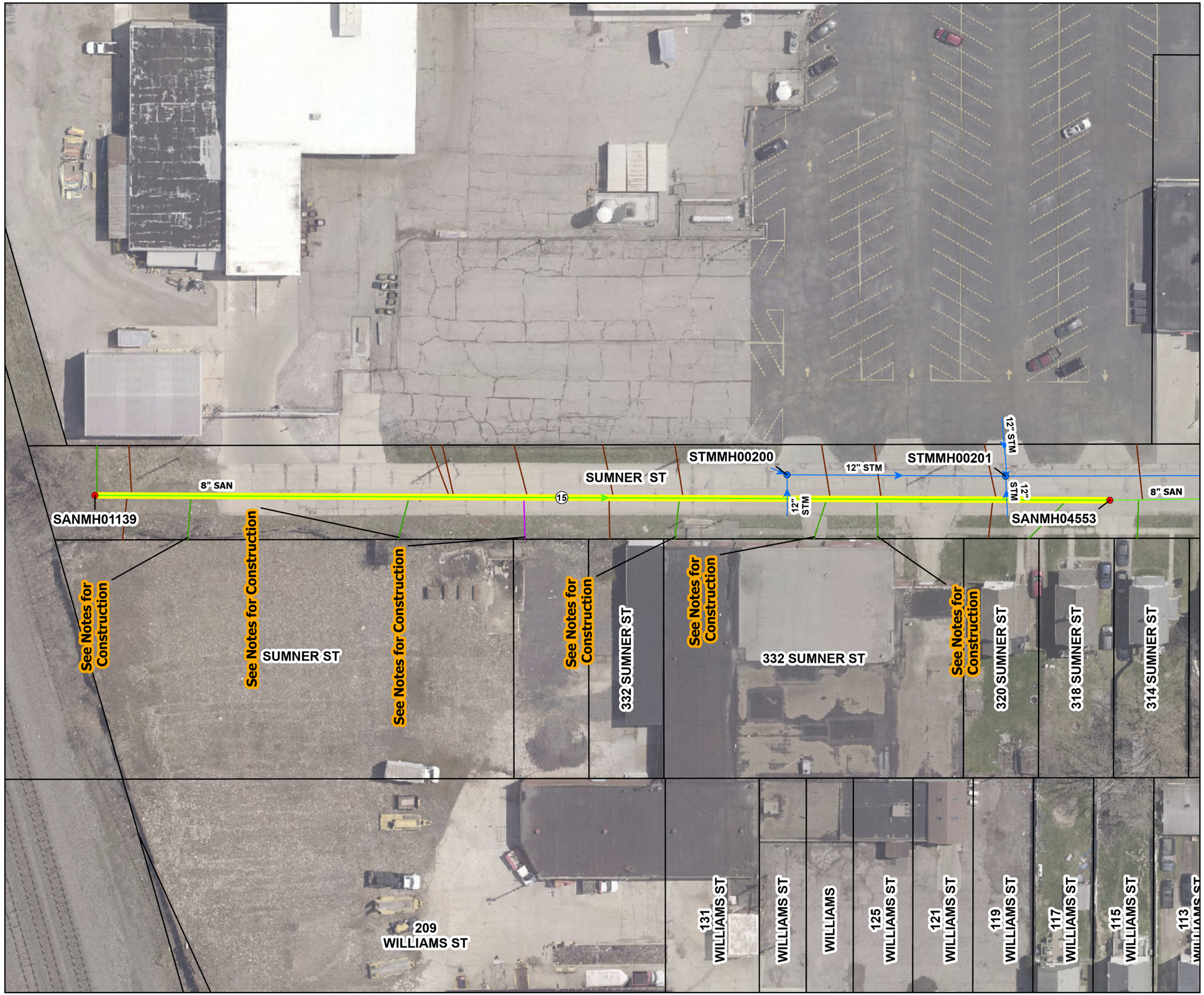
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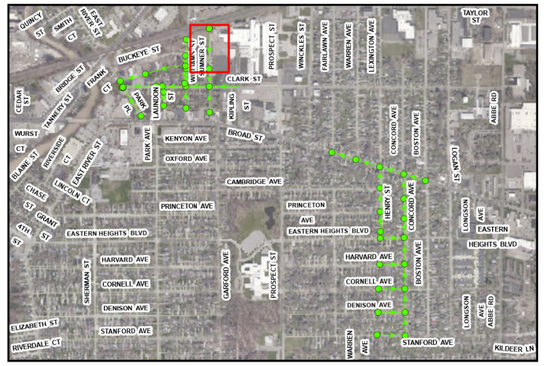
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Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio





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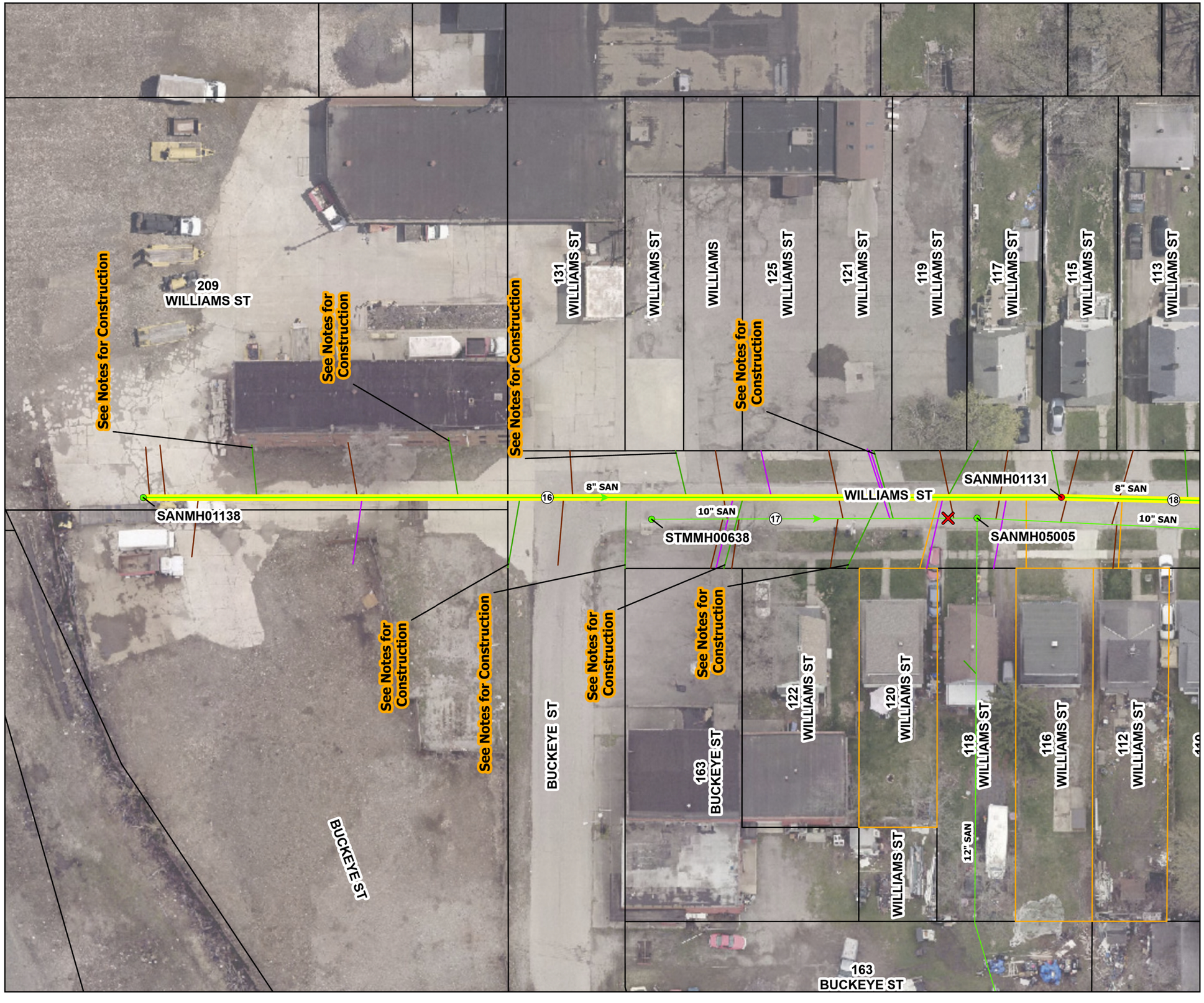
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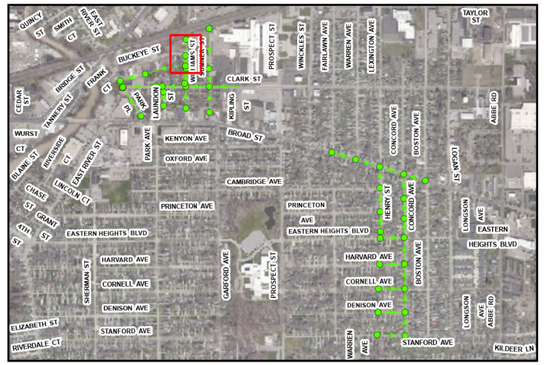
0 25 50 100 Feet

Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM





Key Map

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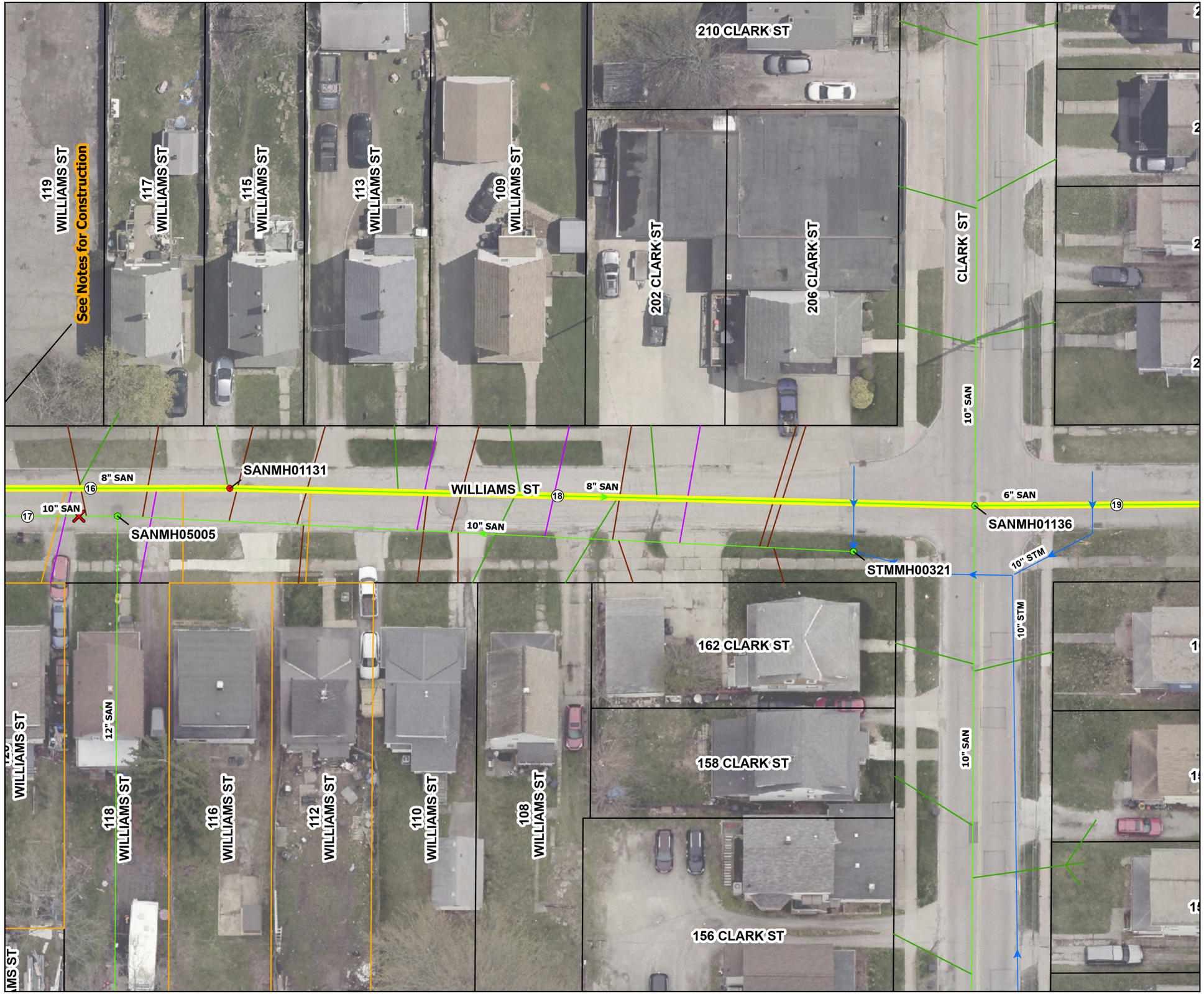
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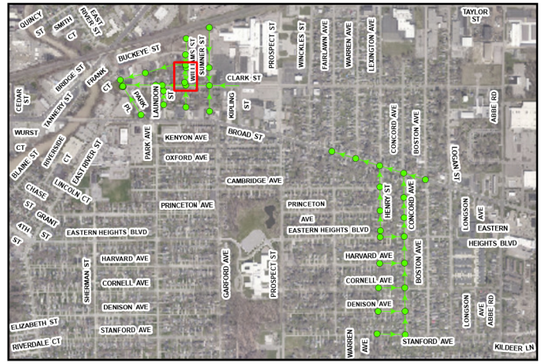
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Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM





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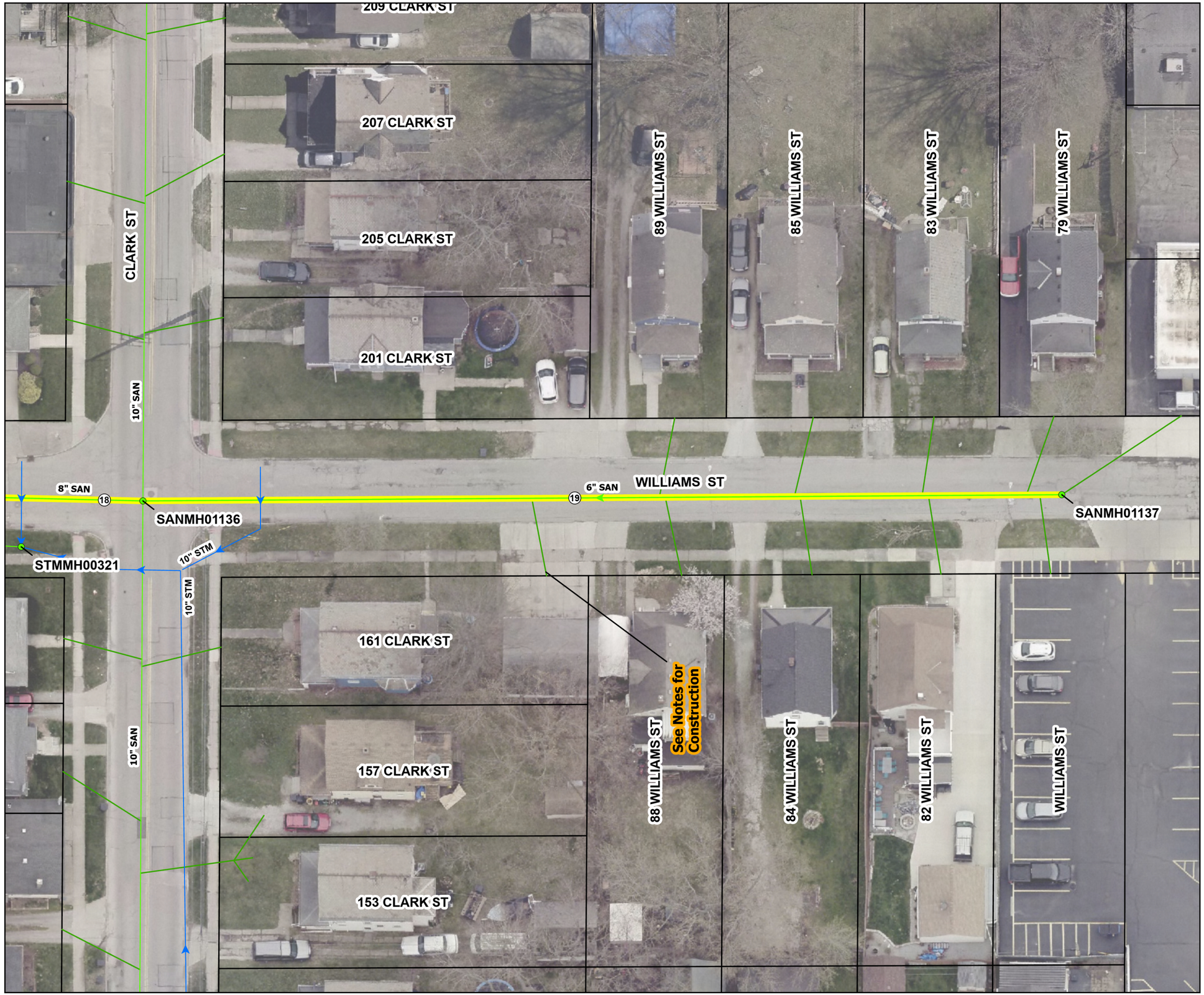
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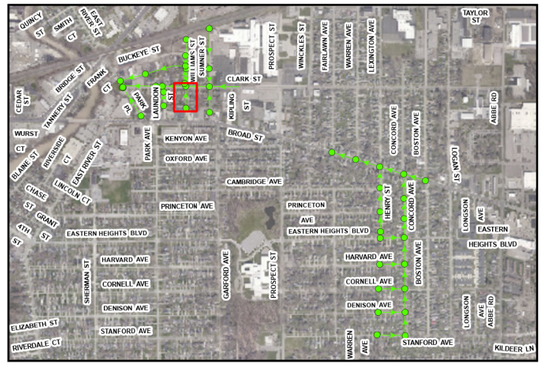
0 15 30 60 Feet

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Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM





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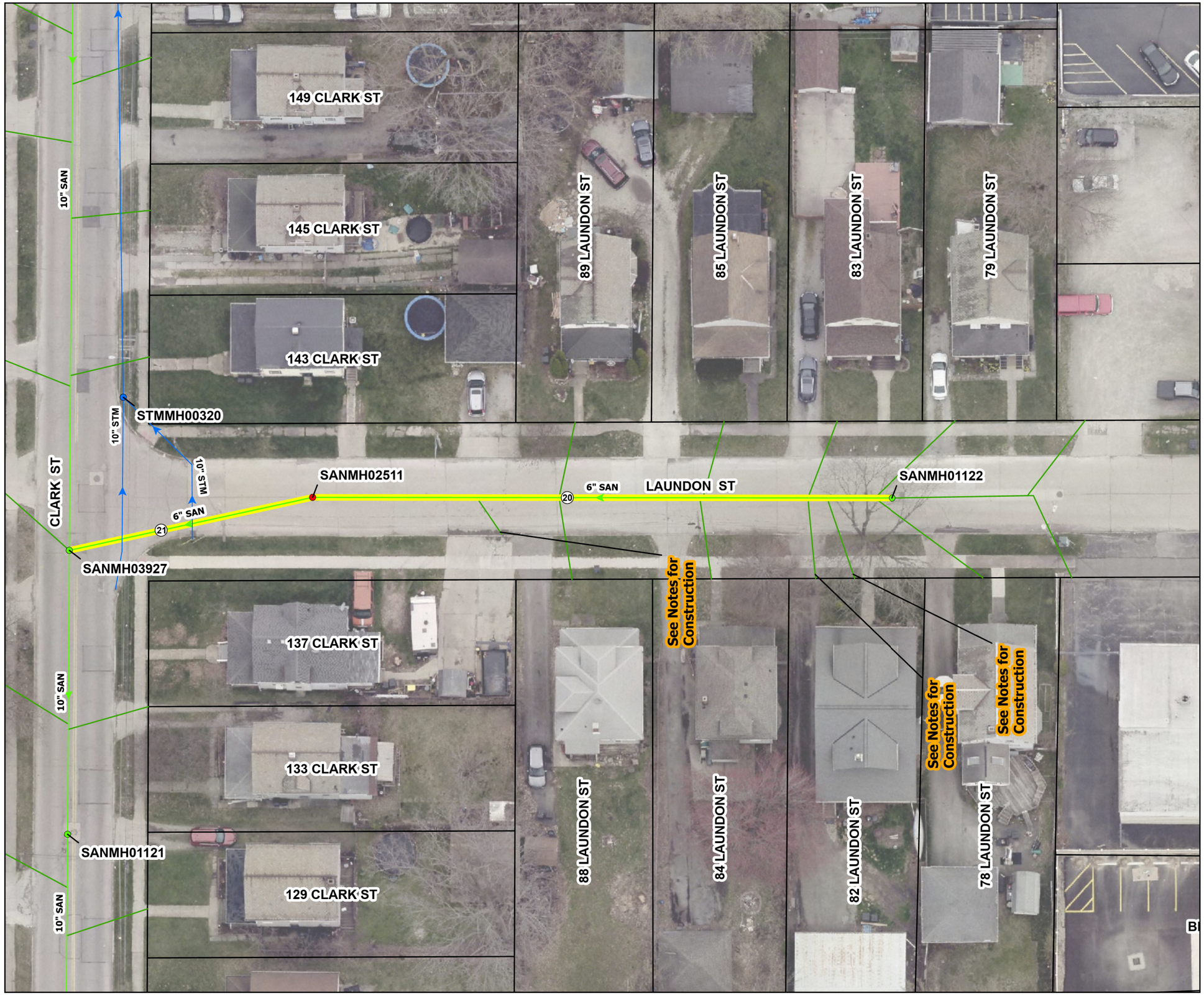
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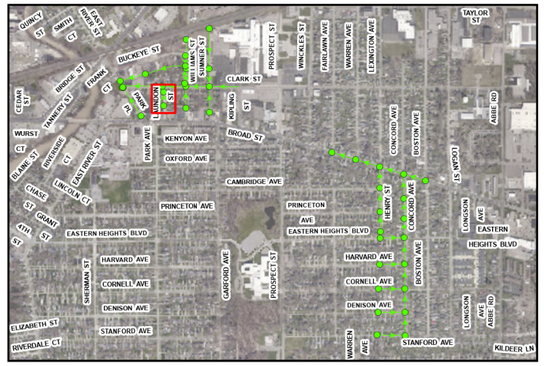
0 15 30 60 Feet

Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM





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Figure 2
Rehabilitation Detailed Maps

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio

AECOM

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio
Table 1. Rehabilitation Table

													(10' typ.)	(10' typ.)	(10' typ.)									
													Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13
													Internal Point	Internal Point	Internal Point	Full Segment	Full Segment	Full Segment	Full Segment	Connection	Lateral and Connection	Lateral and Connection	Lateral Liner	Vacuum Inserted	Manhole
												PAVEMENT TYPE	Repair by Lining	Repair by Lining	Repair by Lining	Repair By	Repair By	Repair By	Repair By	Cut	Liner 8" Main 6" Lateral	Liner 12" Main 6" Lateral	6" Diameter	Sewer	Rehabilitation
REF.	PIPE	DETAILED MAP	NAME	NAME	FROM	TO	PIPE DIAMETER	PIPE LENGTH	LOCATION	NOTES FOR	INVERT DEPTH	A-ASPHALT	6"	8"	10"	Lining 6"	Lining 8"	Lining 10"	Lining 12"		10' Lateral Length	10' Lateral Length	Lateral	Clean-Out	
NO.	I.D. NO.	PAGE NO.	STREET	SEWER SEGMENT	MANHOLE	MANHOLE	(IN)	(FT, +/-)	(FT, +/-)	CONSTRUCTION	(FT, +/-)	C-CONCRETE	EACH	EACH	EACH	L.F.	L.F.	L.F.	L.F.	EACH	EACH	EACH	L.F.	EACH	EACH
1A	1	1	Stanford Ave	SANMH00025-SANMH00748	SANMH00025	SANMH00748	8	372	0'-372'	Full liner. 8 connection cuts.	6'	A w/C BASE					372			8					
1B	1	1	Stanford Ave	SANMH00025-SANMH00025	SANMH00025	SANMH00025	N/A	N/A	0'	Manhole Rehabilitation MH SANMH00025. Infiltration weeping through walls as result of mainline dye test, 1-2 GPM, near north wall around lateral penetration and between joints of bricks 3' +/- from invert. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	6'	A w/C BASE												1
2A	2	2	Concord Ave	SANMH00747-SANMH00746	SANMH00747	SANMH00746	10	309	32'-42'	Short liner. Line over fracture at 37'. Install from upstream end to avoid intruding tap at 62.1' LT.	7'	A w/C BASE			1										
3A	3	3	Concord Ave	SANMH00746-SANMH00745	SANMH00746	SANMH00745	10	327.5	10'-20'	Short liner. Line over broken soil visible pipe defect at 14' and fracture multiple pipe defect at 16'. Rock obstruction at 65' at pre-lining inspection - heavy clean if required.	7'	A w/C BASE			1										
3B	3	3	Concord Ave	SANMH00745-SANMH00745	SANMH00745	SANMH00745	N/A	N/A	0'	Manhole Rehabilitation MH SANMH00745. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	7'	A w/C BASE													1
4A	4	4	Harvard Ave	SANMH00026-SANMH00745	SANMH00026	SANMH00745	8	329.3	0'-330'	Full liner. 6 connection cuts. Heavy roots and blockage at 704 Harvard Ave 43.4' LT (confirmed active by City). Material change from VCP to PVC at 305'-330'.	7'	A w/C BASE					330			6					
4B	4	4	Harvard Ave	SANMH00026-SANMH00026	SANMH00026	SANMH00026	N/A	N/A	0'	Manhole Rehabilitation MH SANMH00026. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	6'	A w/C BASE													1
5A	5	5	Eastern Heights Blvd	SANMH00740-SANMH00724	SANMH00740	SANMH00724	8	322.6	0'-323'	Full liner. 3 connection cuts. 11.25 +/- degree bend at 190'. Contractor to field verify if the bend can be lined through. If not, coordinate with the Engineer. Contractor shall evaluate broken pipe at 109' and verify if it can be lined through. If not, coordinate with the Engineer.	8'	A w/C BASE					323			3					
6A	6	6	Concord Ave	SANMH00724-SANMH02556	SANMH00724	SANMH02556	8	253	0'-253'	Full liner. 8 connection cuts. Fixture tests or cleanout (if existing) dye tests at 450 Concord Ave with camera at lateral to confirm active status. Reinstate active lateral and line over and abandon non-active lateral.	8'	C					253			8					
7A	7	7	Concord Ave	SANMH02556-SANMH02557	SANMH02556	SANMH02557	8	262	0'-262'	Full liner. 13 connection cuts. Spot repair completed by City from 105.6'-112.2'. Fixture tests or cleanout (if existing) dye tests at 441, 437, 432, and 433 Concord Ave with camera at lateral to confirm active status. Reinstate active lateral and line over and abandon non-active lateral. Refer to REF's 7C, 7D, 7E, and 7F for further testing instructions on individual laterals.	8'	C					262			13					
7B	7	7	Concord Ave	SANMH02556-SANMH02557	SANMH02556	SANMH02557	8	262	92.7' RT	Infiltration Runner Lateral 1-3 GPM, T-line 436 Concord Ave.	8'	C									1		17	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
7C	7	7	Concord Ave	SANMH02556-SANMH02557	SANMH02556	SANMH02557	8	262	149.9' RT	Infiltration Runner Lateral 1-3 GPM, T-line 432 Concord Ave. Fixture test or cleanout (if existing) dye test with camera at lateral to confirm active status. Only perform T-Liner if lateral is active. Associated with REF7D.	8'	C									1		17	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
7D	7	7	Concord Ave	SANMH02556-SANMH02557	SANMH02556	SANMH02557	8	262	161.2' RT	Infiltration Runner Lateral 1-3 GPM, T-line 432 Concord Ave. Fixture test or cleanout (if existing) dye test with camera at lateral to confirm active status. Only perform T-Liner if lateral is active. Associated with REF7C.	8'	C									1		17	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
7E	7	7	Concord Ave	SANMH02556-SANMH02557	SANMH02556	SANMH02557	8	262	162.7' LT	Infiltration Runner Connection 8-10 GPM, T-line 433 Concord Ave. Fixture test or cleanout (if existing) dye test with camera at lateral to confirm active status. Only perform T-Liner if lateral is active. Associated with REF7F.	8'	C									1		17	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	

NOTE: All pipes are circular and VCP, except where PVC point repairs are noted in "Notes for Construction"

Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio
Table 1. Rehabilitation Table

													(10' typ.)	(10' typ.)	(10' typ.)									
													Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13
													Internal Point	Internal Point	Internal Point	Full Segment	Full Segment	Full Segment	Full Segment	Connection	Lateral and Connection	Lateral and Connection	Lateral Liner	Vacuum Inserted	Manhole
												PAVEMENT TYPE	Repair by Lining	Repair by Lining	Repair by Lining	Repair By	Repair By	Repair By	Repair By	Cut	Liner 8" Main 6" Lateral	Liner 12" Main 6" Lateral	6" Diameter	Sewer	Rehabilitation
REF.	PIPE	DETAILED MAP	NAME	NAME	FROM	TO	PIPE DIAMETER	PIPE LENGTH	LOCATION	NOTES FOR	INVERT DEPTH	A-ASPHALT	6"	8"	10"	Lining 6"	Lining 8"	Lining 10"	Lining 12"		10' Lateral Length	10' Lateral Length	Lateral	Clean-Out	
NO.	I.D. NO.	PAGE NO.	STREET	SEWER SEGMENT	MANHOLE	MANHOLE	(IN)	(FT, +/-)	(FT, +/-)	CONSTRUCTION	(FT, +/-)	C-CONCRETE	EACH	EACH	EACH	L.F.	L.F.	L.F.	L.F.	EACH	EACH	EACH	L.F.	EACH	EACH
7F	7	7	Concord Ave	SANMH02556-SANMH02557	SANMH02556	SANMH02557	8	262	171' LT	T-line 433 Concord Ave. Fixture test or cleanout (if existing) dye test with camera at lateral to confirm active status. Perform T-liner regardless of fixture test result, but report result to Engineer. There is a nearby lateral at 169.3' LT that is abandoned, do not install T-liner to that location. Associated with REF7E.	8'	C									1		17	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
7G	7	7	Concord Ave	SANMH02556-SANMH02556	SANMH02556	SANMH02556	N/A	N/A	0'	Manhole Rehabilitation MH SANMH02556. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	8'	C													1
7H	7	7	Concord Ave	SANMH02557-SANMH02557	SANMH02557	SANMH02557	N/A	N/A	0'	Manhole Rehabilitation MH SANMH02557. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	8'	C													1
8A	8	8	Concord Ave	SANMH02557-SANMH00723	SANMH02557	SANMH00723	8	328.4	0'-329'	Full liner. 6 connection cuts.	11'	C					329			6					
8B	8	8	E Broad St	SANMH00723-SANMH00723	SANMH00723	SANMH00723	N/A	N/A	0'	Manhole Rehabilitation MH SANMH00723. Infiltration on south side of wall 3' +/- from invert near incoming pipe from south. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	11'	A w/C BASE													1
9A	9	9	Henry St	SANMH00726-SANMH00725	SANMH00726	SANMH00725	8	279.6	0'-280'	Full liner. 3 connection cuts. Tap break-in intruding at 168.7' - lateral cut as part of liner prep.	12'	C					280			3					
9B	9	9	Henry St	SANMH00726-SANMH00725	SANMH00726	SANMH00725	8	279.6	57.4' RT	Infiltration Runner Lateral 1-3 GPM, T-line 312 Henry St.	9'	C									1		17	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
9C	9	9	Henry St	SANMH00726-SANMH00725	SANMH00726	SANMH00725	8	279.6	168.7' RT	Infiltration Runner Lateral 5-8 GPM, T-line 703 E Broad St. Lateral is tap break-in intruding - to be lateral cut as part of liner prep. Lateral ties into mainline on Henry St.	9'	C									1		17	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
9D	9	9	Henry St	SANMH00726-SANMH00726	SANMH00726	SANMH00726	N/A	N/A	0'	Manhole Rehabilitation MH SANMH00726. Cracks, missing mortar, signs of I/I staining throughout manhole. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	9'	C													1
9E	9	9	E Broad St	SANMH00725-SANMH00725	SANMH00725	SANMH00725	N/A	N/A	0'	Manhole Rehabilitation MH SANMH00725. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	12'	A w/C BASE													1
10A	10	10	E Broad St	SANMH04335-SANMH00723	SANMH04335	SANMH00723	10	301.9	0'-302'	Full liner. 8 connection cuts. Spot repair completed by City from 16.7'-24.3'. Fixture tests or cleanout (if existing) dye tests at 817, 809, and 805 E Broad St with camera at lateral to confirm active status - laterals located at 132' LT and 139' LT. Reinstate active lateral and line over and abandon non-active lateral.	11'	A w/C BASE						302		8					
10B	10	10	E Broad St	SANMH04335-SANMH04335	SANMH04335	SANMH04335	N/A	N/A	0'	Manhole Rehabilitation MH SANMH04335. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	9'	A w/C BASE													1
11A	11	11	E Broad St	SANMH00723-SANMH00725	SANMH00723	SANMH00725	10	332	0'-332'	Full liner. 9 connection cuts. Spot repair completed by City from 150'-159'. Tap break-in intruding at 109.6' and 259.1' - lateral cut as part of liner prep.	12'	A w/C BASE						332		9					
12A	12	12	E Broad St	SANMH00725-SANMH00728	SANMH00725	SANMH00728	10	334.6	0'-335'	Full liner. 11 connection cuts. Tap break-in intruding at 24.7', 127', 130.2', and 182.8' - lateral cut as part of liner prep.	12'	A w/C BASE						335		11					
12B	12	12	E Broad St	SANMH00728-SANMH00728	SANMH00728	SANMH00728	N/A	N/A	0'	Manhole Rehabilitation MH SANMH00728. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	12'	A w/C BASE													1
13A	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	0'-331'	Full liner. 10 connection cuts. Joint offset medium at 224'. Contractor to field verify if the joint offset can be lined through. If not, coordinate with the Engineer. Tap break-in intruding at 18.1' - lateral cut as part of liner prep.	12'	A w/C BASE							331	10					

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Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio
Table 1. Rehabilitation Table

												(10' typ.)	(10' typ.)	(10' typ.)										
												Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13
												Internal Point	Internal Point	Internal Point	Full Segment	Full Segment	Full Segment	Full Segment	Connection	Lateral and Connection	Lateral and Connection	Lateral Liner	Vacuum Inserted	Manhole
											PAVEMENT TYPE	Repair by Lining	Repair by Lining	Repair by Lining	Repair By	Repair By	Repair By	Repair By	Cut	Liner 8" Main 6" Lateral	Liner 12" Main 6" Lateral	6" Diameter	Sewer	Rehabilitation
REF.	PIPE	DETAILED MAP	NAME	NAME	FROM	TO	PIPE DIAMETER	PIPE LENGTH	LOCATION	NOTES FOR	INVERT DEPTH	A-ASPHALT	6"	8"	10"	Lining 6"	Lining 8"	Lining 10"	Lining 12"		10' Lateral Length	10' Lateral Length	Lateral	Clean-Out	
NO.	I.D. NO.	PAGE NO.	STREET	SEWER SEGMENT	MANHOLE	MANHOLE	(IN)	(FT, +/-)	(FT, +/-)	CONSTRUCTION	(FT, +/-)	C-CONCRETE	EACH	EACH	EACH	L.F.	L.F.	L.F.	L.F.	EACH	EACH	EACH	L.F.	EACH	EACH
13B	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	18.1' LT	Infiltration Runner Lateral 3-5 GPM, T-line 621 E Broad St. Lateral is tap break-in intruding - to be lateral cut as part of liner prep. Only perform T-Liner installation if a dig in the street pavement is not required.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
13C	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	61.3'	Infiltration Runner Connection 3-5 GPM. Property address for T-liner is unclear. This lateral is drawn as HN 619 in the exhibit but could be HN 620, to be field verified. Only perform T-Liner installation if a dig in the street pavement is not required.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
13D	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	63.2'	Infiltration Runner Lateral 1-3 GPM. Property address for T-liner is unclear. This lateral is drawn as HN620 in the exhibit but could be HN 619, to be field verified. Only perform T-Liner installation if a dig in the street pavement is not required.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
13E	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	108.1' RT	Infiltration Runner Lateral 1-3 GPM, T-line 616 E Broad St. Lateral is tap break-in intruding - to be lateral cut as part of liner prep. Only perform T-Liner installation if a dig in the street pavement is not required.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
13F	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	155.7' LT	Infiltration Runner Lateral 1-3 GPM, T-line 611 E Broad St. HN 615 shares a lateral with HN 611. Field verify if there is an existing cleanout downstream of where HN 615 wyes into HN 611 lateral. If not, then install vac-a-tee downstream of location where HN 615 and 611 laterals connect to each other via wye. Non-perform T-liner to HN611 and vac-a-tee if vac-a-tee placement or a dig would be in street pavement. HN 615 lateral location may vary from what is drawn on the map.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
13G	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	158.9' RT	Infiltration Runner Lateral 1-3 GPM, T-line 612 E Broad St. Only perform T-Liner installation if a dig in the street pavement is not required.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
13H	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	202.5' RT	Infiltration Runner Lateral 0.5-1 GPM, T-line 610 E Broad St. Only perform T-Liner installation if a dig in the street pavement is not required.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
13I	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	204.2' LT	Infiltration Runner Lateral 3-5 GPM, T-line 607 E Broad St. Only perform T-Liner installation if a dig in the street pavement is not required.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
13J	13	13	E Broad St	SANMH00728-SANMH00729	SANMH00728	SANMH00729	12	330.5	250.5' LT	Infiltration Runner Lateral 1-3 GPM, T-line 603 E Broad St. Only perform T-Liner installation if a dig in the street pavement is not required.	12'	A w/C BASE									1	25	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	

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Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio
Table 1. Rehabilitation Table

												(10' typ.)	(10' typ.)	(10' typ.)										
												Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	Item 11	Item 12	Item 13
												Internal Point	Internal Point	Internal Point	Full Segment	Full Segment	Full Segment	Full Segment	Connection	Lateral and Connection	Lateral and Connection	Lateral Liner	Vacuum Inserted	Manhole
											PAVEMENT TYPE	Repair by Lining	Repair by Lining	Repair by Lining	Repair By	Repair By	Repair By	Repair By	Cut	Liner 8" Main 6" Lateral	Liner 12" Main 6" Lateral	6" Diameter	Sewer	Rehabilitation
REF.	PIPE	DETAILED MAP	NAME	NAME	FROM	TO	PIPE DIAMETER	PIPE LENGTH	LOCATION	NOTES FOR	INVERT DEPTH	A-ASPHALT	6"	8"	10"	Lining 6"	Lining 8"	Lining 10"	Lining 12"		10' Lateral Length	10' Lateral Length	Lateral	Clean-Out	
NO.	I.D. NO.	PAGE NO.	STREET	SEWER SEGMENT	MANHOLE	MANHOLE	(IN)	(FT, +/-)	(FT, +/-)	CONSTRUCTION	(FT, +/-)	C-CONCRETE	EACH	EACH	EACH	L.F.	L.F.	L.F.	L.F.	EACH	EACH	EACH	L.F.	EACH	EACH
13K	13	13	E Broad St	SANMH00729-SANMH00729	SANMH00729	SANMH00729	N/A	N/A	0'	Manhole Rehabilitation MH SANMH00729.	12'	A w/C BASE													1
14A	14	14	Sumner St	SANMH01124-SANMH01125	SANMH01124	SANMH01125	8	344.7	0'-345'	Full liner. 11 connection cuts. Spot repair completed by City from 121.7'-124.9' and 155.3'-165.9'.	10'	A w/C BASE					345			11					
15A	15	15	Sumner St	SANMH01139-SANMH04553	SANMH01139	SANMH04553	8	544	0'-544'	Full liner. 7+ connection cuts. Official tap count is not known, contractor to field verify. Pre-lining inspection could not be complete between 51'-171.38' due to two tap break-in intruding laterals, one from each inspection direction - to be lateral cut as part of liner prep. 7 taps for completed inspection portion of pipe. Line over laterals at 51' RT and 171.38' RT. Fixture tests or cleanout (if existing) dye tests at 227.8' right tap (85% encrustation blockage) and 332 Sumner St (3 right taps located between approx. 310'-415') with camera at lateral to confirm active status. Reinstate active laterals and line over and abandon non-active laterals. Spot repair completed by City from 518'-544'. Contractor shall evaluate broken pipe at 296'-301' and verify if it can be lined through. If not, coordinate with the engineer.	9'	C					544			7					
15B	15	15	Sumner St	SANMH01139-SANMH01139	SANMH01139	SANMH01139	N/A	N/A	0'	Manhole Rehabilitation MH SANMH01139. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	8'	C													1
15C	15	15	Sumner St	SANMH04553-SANMH04553	SANMH04553	SANMH04553	N/A	N/A	0'	Manhole Rehabilitation MH SANMH04553.	9'	C													1
16A	16	16	Williams St	SANMH01138-SANMH01131	SANMH01138	SANMH01131	8	391.2	0'-392'	Full liner. 11 connection cuts. Coordinate with City for right of entry to upstream manhole on private property before proceeding to work. Line over lateral at 160' RT. Fixture tests or cleanout (if existing) dye tests at 209 Williams St, 163 Buckeye St/122 Williams St, and 131/121 Williams St with camera at lateral to confirm active status. Reinstate active laterals and line over and abandon non-active laterals. Spot repair completed by City from 379'-385'. Tap break-in intruding lateral at 339.4' - to be lateral cut as part of liner prep.	8'	A w/C BASE					392			11					
16B	16	16	Williams St	SANMH01138-SANMH01131	SANMH01138	SANMH01131	8	391.2	339.1 RT	Infiltration Runner Lateral 1-3 GPM, T-line 120 Williams St.	8'	A w/C BASE									1		22	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
16C	16	16	Williams St	SANMH01138-SANMH01131	SANMH01138	SANMH01131	8	391.2	375.7 RT	Infiltration Runner Lateral 5-8 GPM, T-line 116 Williams St.	8'	A w/C BASE									1		22	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
16D	16	16	Williams St	SANMH01131-SANMH01131	SANMH01131	SANMH01131	N/A	N/A	0'	Manhole Rehabilitation MH SANMH01131. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	8'	A w/C BASE													1
17A	17	16	Williams St	STMMH00638-SANMH05005	STMMH00638	SANMH05005	10	138	121'-131'	Short liner. Line over broken and fracture multiple pipe defect at 126'. Install from downstream end to avoid intruding taps.	7'	A w/C BASE			1										
18A	18	17	Williams St	SANMH01131-SANMH01136	SANMH01131	SANMH01136	8	237.5	0'-238'	Full liner. 6 connection cuts.	13'	A w/C BASE					238			6					
18B	18	17	Williams St	SANMH01131-SANMH01136	SANMH01131	SANMH01136	8	237.5	25.8' RT	Infiltration Runner Lateral 3-5 GPM, T-line 112 Williams St.	8'	A w/C BASE									1		22	Install Vacuum Inserted Sewer Clean-Out if no existing clean-out is found. Terminate laterals liner at new clean-out if installed.	
19A	19	18	Williams St	SANMH01137-SANMH01136	SANMH01137	SANMH01136	6	295	0'-295'	Full liner. 9 connection cuts. Steep slope near downstream end of pipe. Fixture tests, cleanout or floor trap (if existing) dye tests at 168.8' left tap with camera at lateral to confirm active status. Reinstate active lateral and line over and abandon non-active lateral.	13'	A w/C BASE				295				9					

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Consent Decree Control Measure #8
Phase #1 Sewer Rehabilitation Project
Elyria, Ohio
Table 1. Rehabilitation Table

REF. NO.	PIPE I.D. NO.	DETAILED MAP PAGE NO.	NAME STREET	NAME SEWER SEGMENT	FROM MANHOLE	TO MANHOLE	PIPE DIAMETER (IN)	PIPE LENGTH (FT, +/-)	LOCATION (FT, +/-)	NOTES FOR CONSTRUCTION	INVERT DEPTH (FT, +/-)	PAVEMENT TYPE A-ASPHALT C-CONCRETE	(10' typ.) Item 1 Internal Point Repair by Lining 6" EACH	(10' typ.) Item 2 Internal Point Repair by Lining 8" EACH	(10' typ.) Item 3 Internal Point Repair by Lining 10" EACH	Item 4 Full Segment Repair By Lining 6" L.F.	Item 5 Full Segment Repair By Lining 8" L.F.	Item 6 Full Segment Repair By Lining 10" L.F.	Item 7 Full Segment Repair By Lining 12" L.F.	Item 8 Connection Cut EACH	Item 9 Lateral and Connection Liner 8" Main 6" Lateral 10' Lateral Length EACH	Item 10 Lateral and Connection Liner 12" Main 6" Lateral 10' Lateral Length EACH	Item 11 Lateral Liner 6" Diameter Lateral L.F.	Item 12 Vacuum Inserted Sewer Clean-Out EACH	Item 13 Manhole Rehabilitation EACH
20A	20	19	Laundon St	SANMH01122-SANMH02511	SANMH01122	SANMH02511	6	184.7	0'-185'	Full liner. 10 connection cuts. Spot repair completed by City from 27.5'-35.6' and 66.7'-73.9'. Fixture tests or cleanout (if existing) dye tests at 82 Laundon St and driveway/floor drain dye test at 132.3' left tap with camera at lateral to confirm active status. Reinstate active lateral and line over and abandon non-active lateral.	6'	C				185				10					
20B	20	19	Laundon St	SANMH02511-SANMH02511	SANMH02511	SANMH02511	N/A	N/A	0'	Manhole Rehabilitation MH SANMH02511. Remove deposits/debris at manhole invert as part of the surface prep for manhole rehabilitation.	6'	C													1
21A	21	19	Laundon St	SANMH02511-SANMH03927	SANMH02511	SANMH03927	6	79.25	0'-80'	Full liner. 0 connection cuts. 11.25 degree +/- bends at 30', 44', and 62' . Contractor to field verify if the bends can be lined through. If not, coordinate with the Engineer. Contractor shall evaluate broken pipe at 3' and 65' and verify if it can be lined through. If not, coordinate with the Engineer.	6'	C				80				0					
TOTALS													0	0	3	560	3668	969	331	139	10	9	410	0	15
CONTINGENCY													2	2	0	10	32	11	9	11	0	0	0	19	0
COMBINED TOTAL													2	2	3	570	3700	980	340	150	10	9	410	19	15

	Item 14 6" Sewer Lateral Repair With Excavation L.F.	Item 15 6" Sewer Lateral Repair Without Excavation L.F.	Item 16 Pavement Replacement Full Depth Concrete S.Y.	Item 17 Pavement Replacement Asphalt Overlay w/ Concrete Base S.Y.	Item 18 Drive Apron Replacement S.F.	Item 19 Sidewalk Replacement S.F.	Item 20 External Point Repair Of 6"-12" Sewer EACH
TOTALS	0	0	0	0	0	0	0
CONTINGENCY	12	12	15	40	200	100	1
COMBINED TOTAL	12	12	15	40	200	100	1

NOTE: All pipes are circular and VCP, except where PVC point repairs are noted in "Notes for Construction"

GENERAL CONSTRUCTION NOTES

1. ALL WORK PERFORMED SHALL BE DONE IN ACCORDANCE WITH CURRENT CITY OF ELYRIA CODIFIED ORDINANCES AND STANDARDS AND THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION (ODOT) CONSTRUCTION AND MATERIAL SPECIFICATIONS (CURRENT EDITION), AND ODOT STANDARD DRAWINGS, AS INDICATED.

2. THE LOCATION, TYPE, DEPTH, AND SIZE OF ALL EXISTING UNDERGROUND PIPES AND UTILITIES SHOWN ON THESE PLANS HAVE BEEN OBTAINED BY FIELD CHECKS AND SEARCHES OF AVAILABLE RECORDS. IT IS BELIEVED THAT THEY ARE ESSENTIALLY CORRECT. THE ENGINEER MAKES NO GUARANTEES AS TO THEIR ACCURACY OR COMPLETENESS. EXACT LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES MUST BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION IN THE AREA.

3. CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO EXISTING UNDERGROUND UTILITY LINES DURING THE INSTALLATION OF THE SEWER AND WATER LINE AND APPURTENANCES. ANY DAMAGE SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.

4. EACH RESIDENCE AND BUILDING MAY BE SERVICED BY UNDERGROUND SANITARY, STORM, GAS, WATER, CABLE TV, ELECTRIC AND TELEPHONE REGARDLESS IF THEY ARE SHOWN ON THE PLANS, OR NOT. THE CONTRACTOR SHALL USE CAUTION WHEN EXCAVATING AND PROVIDE SUPPORT WHERE NECESSARY.

5. CONTRACTOR SHALL ASSUME ALL RISKS AS TO THE NATURE AND BEHAVIOR OF THE SOIL WHICH MAY BE ENCOUNTERED, INCLUDING ANY DIFFERENCES THAT MAY BE DUE TO ROCK, QUICKSAND, OR OTHER UNFAVORABLE CONDITIONS. THE CONTRACTOR MAY CONDUCT SUBSURFACE TESTS AND INVESTIGATIONS AS DEEMED NECESSARY PRIOR TO SUBMISSION OF THE BID.

6. WORKING HOURS WITHIN THE CITY ARE 7:00 AM TO 8:00 PM MONDAY THROUGH FRIDAY; HOWEVER CONTRACTOR MAY BE PERMITTED TO WORK ALTERNATIVE HOURS AND WEEKENDS, IF APPROVED BY THE CITY ENGINEER.

7. ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWERS ARE PROHIBITED PER CITY OF ELYRIA'S CODIFIED ORDINANCE SECTION 932.03.

8. PREMIUM BACKFILL TO BE PLACED AND COMPACTED TO 98% OF THE MAXIMUM DRY DENSITY IN ALL TRENCHES UNDER PAVEMENT, OR DRIVE AREAS AND EXTEND 5' BEYOND THE PAVEMENT, OR DRIVE EDGE ON EITHER SIDE. PREMIUM BACKFILL SHALL BE ODOT 304 LIMESTONE.

9. ALL EXISTING GAS MAINS SHOWN IN PROFILE ARE ASSUMED TO HAVE 3' COVER.

10. ALL EXISTING WATER MAINS SHOWN IN PROFILE ARE ASSUMED TO HAVE A MINIMUM OF 4.5' COVER.

11. ALL EXISTING UNDERGROUND ELECTRIC CONDUIT IN PROFILE ARE ASSUMED TO HAVE A MINIMUM OF 3' COVER.

12. CONTRACTOR TO COORDINATE RELOCATION WITH ALL UTILITY COMPANIES SO AS NOT TO DELAY CONSTRUCTION.

13. THE TERMS "OWNER", " DEPARTMENT", "CITY", AND "CITY OF ELYRIA" ARE USED INTERCHANGEABLY.

14. CONSTRUCTION STAGING AND STORAGE AREAS SHALL BE COORDINATED AND OBTAINED BY THE CONTRACTOR.

15. IN AREAS WHERE ROADS NEED TWO WAY TRAFFIC AND WHERE ENTIRE DRIVE APRONS ARE AFFECTED BY WORK, THE CONTRACTOR SHALL USE ODOT MEDIUM SET (MS), OR FAST SET (FS) CONCRETE MIX TO MAINTAIN ACCESS TO RESIDENCE AND FULLY OPEN ROADS TO THE FLOW OF TWO WAY TRAFFIC WITHIN 24 HOURS.

16. UTILITIES: AT LEAST TWO (2) WORKING DAYS BEFORE BREAKING GROUND, CONTRACTOR SHALL NOTIFY ALL PUBLIC SERVICE AGENCIES HAVING WIRE, POLES, PIPE, CONDUITS, MANHOLES, OR OTHER STRUCTURES THAT MAY BE AFFECTED BY THIS PROJECT. FOR WATER, STORM AND SANITARY UTILITIES OWNED BY THE CITY OF ELYRIA, THE CONTRACTOR SHALL NOTIFY THE CITY AT LEAST THREE (3) DAYS IN ADVANCE OF PERFORMING WORK.

    THE CONTRACTOR SHALL NOTIFY THE OHIO UTILITIES PROTECTION SERVICE (OUPS), THE OHIO & GAS PROCEDURES UNDERGROUND PROTECTION SERVICE (OGPUPS), AND ALL NON REGISTERED UTILITY OWNERS AT LEAST TWO (2) WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN ALL AREAS.

OUPS 1-800-362-2764 (CONTACT LIMITED BASIS PARTICIPANTS DIRECTLY).
OGPUPS 1-800-925-0988.

THE LOCATION OF UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE AS OBTAINED FROM THE OWNERS OF UTILITIES AS REQUIRED BY SECTION 153.64 ORC.

LISTED BELOW ARE ALL IDENTIFIED UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

UTILITIES

ENGINEERING
CITY OF ELYRIA
131 COURT STREET
ELYRIA, OHIO 44035
PHONE (440) 326-1444
PROJECT CONTACT:
KATHRYN McKILLIPS
kmckillips@cityofelyria.org

ELECTRIC
OHIO EDISON
DOUGLAS LINN
6326 LAKE AVENUE
ELYRIA, OHIO 44035
PHONE (440) 326-3268
linndm@firstenergycorp.com

TELEPHONE
WINDSTREAM
GEOFFREY HAMM
560 TERNES AVENUE
ELYRIA, OHIO 44035
PHONE (440) 329-4245
geoffrey.p.hamm@windstream.com

WASTE WATER POLLUTION CONTROL
CITY OF ELYRIA
SHAYNE STEWART
1194 GULF ROAD
ELYRIA, OHIO 44035
PHONE (440) 366-2211
EXT. 5100
sstewart@cityofelyria.org

GAS
COLUMBIA GAS OF OHIO
ADAM WOODIE
3101 NORTH RIDGE ROAD
LORAIN, OH 44055
PHONE (440) 240-6144
awoodie@nisource.com
EMERGENCY PHONE
(866) 632-6243

CABLE
SPECTRUM
MARTY VANKUREN
576 TERNES AVENUE
ELYRIA, OHIO 44035
PHONE (216) 854-0755
marty.vankuren@charter.com

WATER DISTRIBUTION
CITY OF ELYRIA
DAVE ROTHGERY
851 GARDEN STREET
ELYRIA, OHIO 44035
PHONE (440) 322-2927
drothgery@cityofelyria.org

TELEPHONE
WINDSTREAM
KEVIN DEMBIEC
560 TERNES AVENUE
ELYRIA, OHIO 44035
PHONE (440) 329-4247
kevin.dembiec@windstream.com

CABLE
SPECTRUM
DAN MCCAFFERTY
576 TERNES AVENUE
ELYRIA, OHIO 44035
PHONE (330) 351-3373
daniel.mccafferty@charter.com

17. THE CITY WILL ALLOW THE CONTRACTOR TO USE WATER FROM A DESIGNATED HYDRANTS FOR CONSTRUCTION AT NO COST. A BACKFLOW PREVENTER AND WATER METER SHALL BE USED.

18. THE CONTRACTOR SHALL COORDINATE WITH THE CITY WATER DISTRIBUTION DEPARTMENT FOR ANY INTERRUPTION OF WATER SERVICE NECESSARY TO COMPLETE THE WORK. IF THE INTERRUPTION IS LONGER THAN 4 HOURS, THE CONTRACTOR SHALL PROVIDE AND PAY FOR A TEMPORARY SERVICE.

19. ANY DRAIN TILE OR SEWER PIPE DISTURBED DURING CONSTRUCTION, DOCUMENTED ON THE PLANS OR NOT, SHALL BE RECONNECTED WITH LIKE MATERIAL AND JOINED BY AN APPROVED COUPLING.

20. IF ROAD RESTORATION WILL NOT BE COMPLETED BY NOVEMBER 25, 2026, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACEMENT OF TEMPORARY PAVEMENT, TO REMAIN IN PLACE UNTIL PERMANENT RESTORATION IS COMPLETED.

21. CONTRACTORS AND SUBCONTRACTORS ARE REQUIRED UNDER OHIO REVISED CODE SECTION 149.53 TO NOTIFY THE OHIO HISTORICAL SOCIETY AND THE OHIO HISTORIC SITE PRESERVATION BOARD OF ARCHAEOLOGICAL DISCOVERIES LOCATED IN THE PROJECT AREA, AND TO COOPERATE WITH THOSE ENTITIES IN ARCHAEOLOGICAL AND HISTORIC SURVEYS AND SALVAGE EFFORTS IF SUCH DISCOVERIES ARE UNCOVERED WITHIN THE PROJECT AREA.

22. UNAVOIDABLE CUTTING OF ANY SIZE TREES USED FOR ROOSTING AND BROOD REARING HABITAT FOR THREATENED AND ENDANGERED BAT SPECIES SHALL BE PERFORMED ONLY BEFORE APRIL 1 OR AFTER SEPTEMBER 30 WHEN THE BATS WOULD NOT BE USING SUCH HABITAT. IF TREE CUTTING WOULD NEED TO OCCUR OUTSIDE OF THIS TIME WINDOW, A SURVEY MUST BE COORDINATED WITH OHIO DIVISION OF NATURAL RESOURCES.

23. PROPERLY INSTALLED EROSION CONTROL BARRIERS (E.G., SILT FENCES, STRAW BALES, ETC.) SHOULD BE LOCATED ON SLOPES, ALONG STREAMS AND DRAINAGE WAYS, AROUND DRAINAGE STRUCTURES, AND ANYWHERE ELSE THAT EXPOSED SOIL COULD RUN OFF AND CREATE SEDIMENT PROBLEMS. ALL SEDIMENT CONTROL MEASURES SHALL BE IN PLACE PRIOR TO STARTING CONSTRUCTION.

EXISTING UTILITIES:

1. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION, SCHEDULING AND PAYING FOR TEMPORARY OR PERMANENT RELOCATION OF UTILITIES NECESSARY TO COMPLETE THE WORK.

WORK LIMITS:

1. THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

2. CONSTRUCTION VEHICLES AND MATERIALS SHOULD NOT BE STAGED OR STORED WITHIN THE DRIPLINE OF TREES.

CONSTRUCTION NOISE:

1. ACTIVITIES AND LAND USE ADJACENT TO THIS PROJECT MAY BE EFFECTED BY CONSTRUCTION NOISE. IN ORDER TO MINIMIZE ANY ADVERSE CONSTRUCTION NOISE IMPACTS, DO NOT OPERATE POWER-OPERATED CONSTRUCTION-TYPE DEVISES BETWEEN THE HOURS OF 8 PM AND 7 AM. ANY DEVIATIONS TO THE HOURS OF OPERATION FOR POWER-OPERATED CONSTRUCTION-TYPE DEVICES MUST BE APPROVED BY THE FIELD ENGINEER. IN ADDITION, DO NOT OPERATE AT ANY TIME ANY SUCH DEVICE IN SUCH A MANNER THAT THE NOISE CREATED SUBSTANTIALLY EXCEEDS THE NOISE CUSTOMARY AND NECESSARILY ATTENDANT TO THE REASONABLE AND EFFICIENT PERFORMANCE OF SUCH EQUIPMENT.

EXISTING UTILITY REMOVAL

1. COST FOR ALL UTILITIES TO BE REMOVED AS NECESSARY FOR CONSTRUCTION OR AS SHOWN ON THE PLAN AND PROFILE DRAWINGS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THE NEW UTILITY TO BE INSTALLED WHICH NECESSITATES THE EXISTING UTILITY REMOVAL. I.E. THERE ARE NO BID UNITS COSTS FOR UTILITY REMOVAL.

EXISTING UTILITY SERVICE LATERALS

1. ALL SERVICE LATERALS FOR SANITARY, STORM, WATER AND GAS TO BE MARKED IN THE FIELD. WHAT IS SHOWN ON PLANS FOR LATERALS ARE PLACE HOLDERS AND NOT NECESSARILY FROM OUPS OR PHYSICAL SURVEY. THE CONTRACTOR SHALL CALL OUPS FOR MARKING ALONG COORDINATING WITH THE CITY ENGINEERING AND WATER DEPARTMENTS FOR MARKING IN THE FIELD PRIOR TO EXCAVATION.

ITEM 204 - SUBGRADE COMPACTION, AS PER PLAN AND SUBGRADE REPAIRS:

CONSTRUCT THE SUBGRADE AS FOLLOWS AND IN THE FOLLOWING SEQUENCE:

1. FOLLOWING REMOVAL OF EXISTING AGGREGATE BASE, THE ENGINEER WILL INSPECT THE NEWLY EXPOSED SUBGRADE. THE SUBGRADE SHALL THEN BE PROOF ROLLED IN ACCORDANCE WITH ODOT ITEM 204.06. PRIOR TO SUBGRADE COMPACTION, THE ENGINEER WILL IDENTIFY THE AREAS OF UNSUITABLE SUBGRADE FOR REPAIR (SEE STEP 2). SUBSEQUENTLY, SUBGRADE SHALL BE COMPACTED IN ACCORDANCE WITH ODOT ITEM 204.03. VIBRATORY ROLLERS SHALL NOT BE USED IN THE COMPACTION OF THE SUBGRADE. ALL MATERIAL, LABOR AND EQUIPMENT REQUIRED TO COMPLETE THE WORK AS DESCRIBED HEREIN COMPLETE IN PLACE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR SUBGRADE COMPACTION, AS PER PLAN.

2. THE LIMITS DESIGNATED BY THE ENGINEER FOR EXCAVATION OF UNSUITABLE SUBGRADE BASED ON THE PROOF ROLLING RESULTS AND VISUAL OBSERVATIONS SHALL BE REPAIRED. STABILIZATION OF LOCALIZED AREAS SHALL BE ACHIEVED BY CONDITIONING THE SOIL TO ITS OPTIMUM MOISTURE CONTENT FOLLOWED BY ROLLING OR CHOKING WITH CRUSHED STONE. SUBSEQUENTLY, THE SUBGRADE SHALL BE COMPACTED IN ACCORDANCE WITH ODOT ITEM 204.03. ALL MATERIAL, LABOR AND EQUIPMENT REQUIRED TO COMPLETE THE WORK AS DESCRIBED HEREIN COMPLETE IN PLACE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR SUBGRADE REPAIRS.

ITEM 407 - NON-TRACKING TACK COAT

1. CONTRACTOR SHALL SUPPLY 702.12 NON-TRACKING ASPHALT EMULSION AND FOLLOW ALL REQUIREMENTS OF ODOT CONSTRUCTION AND MATERIAL SPECIFICATIONS 407 AND 702.12. ALL MATERIALS, LABOR AND EQUIPMENT REQUIRED TO COMPLETE THE WORK AS DESCRIBED ABOVE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE ASSOCIATED ASPHALT PAVEMENT BID ITEMS.

REVIEW OF DRAINAGE FACILITIES

1. BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE CITY OF ELYRIA, REPRESENTATIVES OF THE CITY OF ELYRIA AND THE CONTRACTOR, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE CITY OF ELYRIA.

2. ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER WITH ALL RELATED COSTS BEING THE FULL RESPONSIBILITY OF THE CONTRACTOR.

3. PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR THE PERTINENT ODOT 611 CONDUIT ITEMS.

EXISTING TREES:

1. BEFORE THE START OF WORK, REPRESENTATIVES OF THE CITY OF ELYRIA AND THE CONTRACTOR SHALL CONDUCT A SURVEY OF THE EXISTING TREES WITHIN THE WORK ZONE AND IDENTIFY ANY TREE BRANCHES AT RISK OF DAMAGE BY SEWER CONSTRUCTION ACTIVITIES. IDENTIFIED BRANCHES SHALL BE PRUNED UNDER THE SUPERVISION OF AN ARBORIST. THE COST OF TREE TRIMMING SHALL BE INCLUDED IN THE CONTRACT PRICE OF THE SEWER.

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PROJECT
CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT
ELYRIA, OH 44035

CLIENT
CITY OF ELYRIA
DEPARTMENT OF PUBLIC SERVICE
131 COURT STREET
ELYRIA, OH 44035

CONSULTANT
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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	1/7/2026	BID DOCUMENTS

PROJECT NUMBER
60332065

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
DET1

SEEDING AND MULCHING

1. THIS ITEM SHALL CONSIST OF FURNISHING SEED, AGRICULTURAL LIMITING MATERIALS, COMMERCIAL FERTILIZER, MULCHING MATERIAL AND WATER AND PLACING AND INCORPORATING AS SPECIFIED. THE AREA TO BE SEEDED AND PAID UNDER THIS ITEM SHALL INCLUDE ALL GRASS AREAS DESIGNATED BY THE ENGINEER WITHIN THE RIGHT OF WAY LIMITS OR WORK LIMIT, AND ALL AREAS OUTSIDE OF THE PROJECT LIMITS WHERE VEGETATIVE GROWTH HAS BEEN INJURIOUSLY DISTURBED OR DESTROYED BY THE CONTRACTOR. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT EDITION OF ODOT CMS ITEM 659.

2. AREAS TO BE SEEDED SHALL BE FREE OF ROCK AND OTHER FOREIGN MATERIAL THREE INCHES (3) OR GREATER IN ANY DIMENSION AND SHALL BE SATISFACTORILY SHAPED AND FINISHED AS PROVIDED IN ODOT 203. IN ADDITION FOUR INCHES (4) OF TOPSOIL SHALL BE PLACED ON TOP OF THE SURFACE TO BE SEEDED PER ODOT 653.

3. THE SEED SHALL BE THOROUGHLY MIXED AND THEN EVENLY SOWN OVER THE PREPARED AREAS AT A RATE LISTED BELOW. SEED SHALL BE SOWN DRY OR HYDRAULICALLY. ALL AREAS TO BE SEEDED IN THE PROJECT ARE CONSIDERED TO BE URBAN IN CHARACTER AND SHALL BE SEEDED WITH THE FOLLOWING MIXTURE (PERCENTAGES BY WEIGHT)

MIX		RATE
37.5%	KENTUCKY BLUEGRASS	3 LBS PER 1,000 SQUARE FEET
37.5%	CREEPING RED FESCUE	3 LBS PER 1,000 SQUARE FEET
25.0%	ANNUAL AND PERENNIAL RYEGRASS	2 LBS PER 1,000 SQUARE FEET

4. IMMEDIATELY AFTER SOWING, THE AREAS SHALL BE RAKED, DRAGGED, OR OTHERWISE TREATED TO COVER THE SEED TO A DEPTH OF APPROXIMATELY ¼ INCH.

5. THE OPERATION OF SEED SOWING SHALL NOT BE PERFORMED WHEN THE GROUND IS FROZEN OR MUDDY, OR WHEN THE SOIL OR WEATHER CONDITIONS WOULD PREVENT THE PROPER SOIL PREPARATION AND SUBSEQUENT OPERATIONS. ALL SEEDING PERFORMED BETWEEN NOVEMBER 1 AND FEBRUARY 28 SHALL BE TEMPORARY IN ACCORDANCE WITH ODOT CMS 207, OR DORMANT SEEDING OR MULCHING.

6. WITHIN 24 HOURS AFTER GIVEN AREA IS SEEDED, MULCH CONFORMING TO ODOT 659.15 SHALL BE EVENLY PLACED OVER ALL SEEDED AREA AT THE RATES PRESCRIBED.

7. THE CONTRACTOR SHALL MAINTAIN ALL SEEDED AND MULCHED AREAS UNTIL FINAL INSPECTION. IF THE PROJECT ACHIEVES SUBSTANTIAL COMPLETION BETWEEN NOVEMBER 1 AND FEBRUARY 28 AND TEMPORARY SEEDING OR MULCHING IS PERFORMED IN THAT PERIOD, THE CONTRACTOR SHALL PERFORM FINAL SEEDING NO LATER THAN MAY 31ST. IF DORMANT SEEDING WAS USED BETWEEN NOVEMBER 1 AND FEBRUARY 28, THE CONTRACTOR SHALL RESEED OR REPAIR AND MULCH ANY AREA, WHICH DOES NOT HAVE GROWTH.

8. THE CONTRACTOR SHALL SUPPLY THE CITY WITH TEN (10) 40 LBS BAGS OF SCOTTS TURF BUILDER EZ SPREAD UPON FINAL ACCEPTANCE.

PROTECTION OF LANDSCAPING

1. THE CONTRACTOR SHALL TAKE CARE AS NOT TO DISTURB LANDSCAPING ITEMS LOCATED OUTSIDE THE RIGHT OF WAY. ANY DAMAGES CAUSED TO THESE ITEMS SHALL BE FULLY RESTORED OR REPLACED BY THE CONTRACTOR WITH ALL RELATED COSTS BEING THE FULL RESPONSIBILITY OF THE CONTRACTOR.

SANITARY SEWER CONSTRUCTION NOTES:

1. 4" TO 10" SANITARY SHALL BE PVC PIPING AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH ASTM D3034, WITH JOINTS PER ASTM D3212 AND INSTALLED PER ASTM D2321 WITH A BEDDING CLASSIFICATION PER ASTM D2321.

2. SANITARY SEWER PIPE CONSTRUCTION SHALL COMPLY WITH ODOT CMS SECTION 611, UNLESS OTHERWISE NOTED HEREIN.

3. ALL SEWER LINES SHALL BE INSPECTED PER ODOT 611.12 TO VERIFY ACCURACY OF ALIGNMENT AND FREEDOM FROM DEBRIS AND OBSTRUCTIONS. THE METHOD OF INSPECTION SHALL BE VIDEO RECORDING. THE CONTRACTOR SHALL NOTIFY THE ENGINEER TWENTY-FOUR (24) HOURS IN ADVANCE OF VIDEO RECORDING. THE CONTRACTOR SHALL CLEAN THE SEWER WITHIN TWENTY-FOUR HOURS PRIOR TO RECORDING. VIDEO RECORDING SHALL BE PERFORMED BY A FIRM EXPERIENCED IN TELEVISING AND RECORDING INSTALLED SEWER PIPE. THE CONTRACTOR SHALL SUBMIT TWO (2) COPIES OF ALL VIDEOS ON DVD OR CD COLOR VIDEO FORMAT AND TWO (2) COPIES OF A TYPEWRITTEN LOG OF THE CONTENTS OF THE VIDEOS. VIDEOS AND LOGS SHALL BE SUBMITTED TO THE OWNER

4. ALL MANHOLES SHALL BE WATERTIGHT STRUCTURES, PRECAST CONCRETE IN ACCORDANCE WITH ASTM C-478. CONNECTIONS BETWEEN SEWER PIPE AND NEW MANHOLE SHALL BE A-LOK OR APPROVED EQUAL MEETING ASTM C-923. CONCRETE SHALL BE CLASS A, 4,000 PSI, 28 DAY COMPRESSIVE STRENGTH. REINFORCING STEEL AND RING WALL DIMENSIONS SHALL BE AS SHOWN IN STANDARD ODOT MANHOLE NO. 3 DRAWING. LIFT HOLES, IF PROVIDED, SHALL BE WATERTIGHT AND FILLED WITH A NON-SHRINK GROUT AFTER SET IN PLACE. JOINTS SHALL BE FORMED ENTIRELY OF CONCRETE EMPLOYING A ROUND RUBBER GASKET (O-RING) CONFORMING TO ASTM C-443, SHALL BE SELF-CENTERING AND MAKE A UNIFORM WATERTIGHT JOINT. JOINTS DAMAGED DURING INSTALLATION SHALL BE REPLACED WITH NEW RING WALLS AS NEEDED.

5. THE CONTRACTOR SHALL PERFORM A MANHOLE VACUUM TEST FOLLOWING THE INSTALLATION OF THE MANHOLE BOTTOM, RING WALL(S) AND TOPS, OR CHIMNEY SECTIONS. ALL MANHOLES SHALL BE VACUUM TESTED IN ACCORDANCE WITH AND MEET ALL THE REQUIREMENTS OF ASTM C-1244. THE MANHOLE SHALL BE TESTED AT 10" OF MERCURY FOR 60 SECONDS AND MAY HAVE LESS THAN 1" REDUCTION. IF THE MANHOLE DOES NOT PASS THE VACUUM TEST, IT SHALL BE REPAIRED AS NEEDED THEN TESTED UNTIL THE MANHOLE PASSES. ALL TESTING SHALL BE PERFORMED AT THE CONTRACTOR'S EXPENSE AND UNDER THE DIRECT OBSERVATION OF THE CITY ENGINEER OR HIS REPRESENTATIVE.

6. CONTRACTOR SHALL BE RESPONSIBLE FOR 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.

FLEXIBLE COUPLINGS:

1. PROVIDE FLEXIBLE COUPLING THAT CONFORMS TO ASTM C1173 AND ASTM D5926 TO COUPLE NEW GRAVITY SEWER PIPE TO EXISTING GRAVITY SEWER PIPE. TIGHTENING BANDS SHALL BE SERIES 316 STAINLESS STEEL WITH STAINLESS STEEL NUT AND BOLTS. TIGHTENING CLAMPS 4-INCH DIAMETER TO 15-INCH DIAMETER COUPLING SHALL BE PROVIDED WITH A SERIES 300 STAINLESS STEEL SHEAR RING HAVING A MINIMUM THICKNESS OF 0.012 INCH.

2. APPROPRIATE COUPLINGS SHALL BE PROVIDED AT ALL JOINTS BETWEEN NEW AND EXISTING PIPES, UNLESS OTHERWISE SHOWN ON THE PLAN, AND SHALL CREATE A WATERTIGHT JOINT BETWEEN THE NEW AND EXISTING PIPES.

MAILBOXES:

1. ANY MAILBOX REMOVED OR DISTURBED WITH CONSTRUCTION SHALL BE RESET IN A CONCRETE BASE AT ITS ORIGINAL LOCATION. THE COST FOR THIS WORK SHALL BE INCLUDED IN THE CONTRACT'S BID PRICE FOR VARIOUS SEWER RELATED ITEMS. NO SEPARATE COMPENSATION WILL BE PAID BY THE CITY TO THE CONTRACTOR.

PERMITS:

1. ALL RIGHT OF WAY OCCUPANCY PERMITS SHALL BE SECURED BY THE CONTRACTOR.

DISPOSAL OF REMOVED MATERIALS:

1. ALL PAVEMENT, CURBING, AND/OR SIDEWALK REMOVED BY THE CONTRACTOR AS PART OF THE WORK SHALL BE DISPOSED AT THE CONTRACTOR'S EXPENSE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS. THE CONTRACTOR MAY DISPOSE THE ASPHALT GRINDINGS AT THE CITY OF ELYRIA CENTRAL MAINTENANCE GARAGE, LOCATED AT 851 GARDEN STREET.

2. ALL EXCAVATED MATERIAL REMOVED BY THE CONTRACTOR FROM UNDER THE ROADWAY FOR THE CONSTRUCTION OF THE SEWER OR MAIN SHALL BE DISPOSED AT THE CONTRACTOR'S EXPENSE IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.

SHEETING / SHORING REQUIREMENTS:

1. THE CONTRACTOR SHALL HAVE A REGISTERED PROFESSIONAL ENGINEER, STATE OF OHIO, DESIGN THE SHEETING SHORING FOR THE TRENCH AT DEPTHS GREATER THAN 20 FEET.

SNOW REMOVAL:

1. FROM NOVEMBER 1 TO APRIL 1, CONTRACTOR SHALL NOTIFY ENGINEER OF ALL CONSTRUCTION PLATES PLACED IN CITY ROADWAYS. THE CITY WILL BE PERFORMING SNOW REMOVAL ON CITY ROADS. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SNOW FROM ROADS THAT ARE CLOSED OR LIMITED TO LOCAL ACCESS ONLY DUE TO CONSTRUCTION. IF A ROAD IS OPENED TO FULL TRAFFIC PRIOR TO COMPLETE RESTORATION, CONTRACTOR SHALL TAKE RESTORATION MEASURES NECESSARY TO FACILITATE PLOWING BY THE CITY. SUCH MEASURE SHALL BE APPROVED BY THE CITY PRIOR TO OPENING THE ROAD TO FULL TRAFFIC. CITY SNOW PLOWING OPERATIONS PILE SNOW ALONG THE STREET CURB. THE CONTRACTOR IS RESPONSIBLE FOR REMOVING SNOW OUTSIDE OF THE WORK ZONE TO ACCESS MATERIALS COVERED BY THE CITY'S SNOW REMOVAL OPERATIONS.

OHIO ENVIRONMENTAL PROTECTION AGENCY (OEPA) NOTES:

1. A MINIMUM 18 INCH VERTICAL CLEARANCE AND 10 FEET HORIZONTAL CLEARANCE SHALL BE MAINTAINED BETWEEN WATER MAINS AND SANITARY SEWERS AND A MINIMUM 12 INCH VERTICAL CLEARANCE AND 4 FEET HORIZONTAL CLEARANCE SHALL BE MAINTAINED BETWEEN MAINS AND STORM SEWERS. WHERE 10 FOOT HORIZONTAL CLEARANCE IS NOT FEASIBLE, A 10 FOOT RADIAL CLEARANCE SHALL BE PROVIDED.

CONSTRUCTION STAKING

1. AFTER PROJECT AWARD, THE CONTRACTOR SHALL BE PROVIDED THE SURVEY AND SEWER DESIGN CAD FILES FOR CONSTRUCTION STAKING AND LAYOUT. THE CONTRACTOR'S SURVEYOR WILL NEED TO USE THESE FILES TO LAYOUT THE ALIGNMENT OF THE SEWERS INCLUDING STAKING MH / STRUCTURE LOCATIONS.

AECOM

PROJECT

CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT

ELYRIA, OH 44035

CLIENT

CITY OF ELYRIA

DEPARTMENT OF PUBLIC SERVICE
131 COURT STREET
ELYRIA, OH 44035

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REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	1/7/2026	BID DOCUMENTS

PROJECT NUMBER

60332065

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

DET2

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POLYVINYL CHLORIDE (PVC) SEWER PIPE
MATERIAL INSTALLATION AND SPECIFICATION

LOCATIONS FOR USE

PVC sewer pipe may be used in residential developments as specified on approved subdivision improvement plans.

SCOPE

This specification covers the requirements for trench excavation, pipe embedment, joining and installing pipe with accessories, backfill placement and installation testing in addition to the material requirements.

TERMINOLOGY

The trench cross-section identifies the meaning and limits of the terminology used in this specification.

STORAGE AND HANDLING OF PVC PIPING MATERIALS

The contractor shall store and handle all PVC piping material at the job site in accordance with UNI-B-5-77 specification of the UNI-BELL PLASTIC PIPE ASSOCIATION.

TRENCH CONSTRUCTION

All trenches shall be excavated on the alignment and to the elevations as indicated on the approved drawings. Any field revisions shall not be made without approval of the City Engineer.

Where work is near utility items the contractor shall notify the utility company 24 hours in advance of beginning any excavation.

The minimum trench width shall be as follows:

Pipe Size (inches)	Trench Width (inches)
6	18
8	24
10	24
12	30
15	30

Wider trenches may be used where unstable soil or depth requirements for working room or safety so require. In such a case, a subtrench shall be used having a width shown above as the minimum trench width.

TRENCH BOTTOM

The soil surface at the trench bottom shall be free of any protrusions which may cause point loading on any portion of the pipe or pipe bell, and shall provide a firm, stable and uniform support for pipe.

When an unstable trench bottom condition is encountered it must be stabilized. On city contracts, any special foundation work required shall be considered extra work subject to extra payment.

Over excavation shall be filled with an approved embedment material and compacted to a density equal to that of the native soil at no expense to the city.

Rocks, hard pan, cobbles, boulders or stones larger than 1 ½" shall be removed from the trench bottom to permit a minimum bedding thickness of 6 inches under the pipe.

EMBEDMENT MATERIALS

All PVC pipe shall be installed with embedment materials meeting ASTM D2321 and the Uni-Bell PVC Pipe Association Design & Installation Handbook, Section 5 specifications for either Class 2 or Class 3. Class 2 coarse grained soils, containing less than 5 percent fines, shall be compacted by saturation or vibration. Class 3 coarse grained soils which contain between 5 and 12 percent fines shall be compacted by either hand, or mechanical tamping, saturation, or vibration, whichever method meets the required density. Class 3 coarse grained soils containing more than 12 per cent fines shall be compacted by hand or mechanical tamping. When tamping methods are used backfill shall be placed in 4" to 6" lifts.

When compacting by saturation, care shall be taken to prevent floatation of the pipe. Saturation shall not be used during freezing weather. Erosion of trench wall at the pipe sides and bottom of trench shall be prevented during jetting.

BEDDING

Bedding shall be use to bring the trench bottom to grade and shall provide uniform support under the pipe. Blocking shall not be used. Bell holes at each joint shall be provided to permit joint assembly while providing uniform pipe support.

HAUNCHING

THE MOST IMPORTANT FACTOR AFFECTING THE PIPE PERFORMANCE AND DEFLECTION IS THE PLACEMENT OF THE HAUNCHING MATERIAL. The haunching material shall be placed and consolidated avoiding both vertical and lateral displacement of the pipe from proper alignment.

INITIAL BACKFILL

Little or no tamping of the initial backfill directly over the top of the pipe to a joint 6" above the pipe shall be permitted. Final backfill shall be compacted to an approved density equal to adjoining soil materials.

LAYING PROCEDURE

Each pipe length shall be clean and free of damage. Pipe bells shall be laid on the upstream end. Trenches shall be dewatered. Whenever pipe laying is interrupted and on overnight work stoppage the open ends shall be temporarily plugged to prevent entrance of water, mud or other foreign matter. No curved alignments shall be used.

JOINING PIPE

Shorter than standard pipe lengths may be used with field cuts made with hand or mechanical saws or pipe cutters. Ends shall be cut square and perpendicular to the pipe axis. Edges shall be beveled. Spigots shall be marked with a wax crayon for proper length of assembly. After the bedding or haunching material. The joints shall be of the manufacturer of the pipe.

PIPE AT MANHOLES

All manhole connections shall be made in accordance with the details shown on Sanitary Sewer Manhole Detail drawings.

LATERAL CONNECTIONS

Fittings shall be used for all building laterals on new construction. Taps into existing PVC lines shall be made using a gasketed fitting in conjunction with a gasketed saddle wye or with a repair sleeve to tie with all stainless steel clamps. Saddles mounted on the pipe with solvent cement or gaskets shall be secured by stainless steel clamps. Holes for a saddle shall be made with a mechanical hole cutter.

On new lines the contractor may use fittings which are prefabricated using pipe sections, molded saddles and PVC solvent cement, provided the solvent cement used in fabrication has cured at least 24 hours prior to installation.

Cementing metered connections without a molded fitting is prohibited.

Each property shall be served by a separate lateral connection to the main sewer. A joint riser shall be prohibited.

All caps or lateral plugs shall be installed in a manner to prevent leakage and to allow testing.

FINAL BACKFILL

The final backfill material must not contain boulders, foreign clumps of dirt or rubble. In all paved areas (under new pavement plus 24 inches each side, under proposed driveway aprons and sidewalk) special backfill shall be placed with approved compaction. In lawn open areas, free of proposed improvements, the excavated material of acceptable nature may be used as backfill.

All PVC pipe must have 30 inches of cover before a whole load may be allowed. The cover must be 48 inches before hyrohammer or impactor types of compactor may be used over the pipe. The use of such compactors shall require that the embedment was placed to at least 85% of Standard Proctor Density.

ACCEPTANCE TESTS

All projects shall be tested upon completion. Sewers which contain mud or other dirt may require cleaning with a sewer cleaning ball or high velocity jet before testing.

Visual test: Sewer lines shall be free of debris and obstructions.

Leakage Test: Location for leakage testing shall be selected by engineer after work is completed and lateral plugsare in place. The engineer may select low air pressure, water infiltration or water exfiltration as the method of testing.

Air testing: The line between twoman holes shall not drop more than 0.5 p.s.i. from 3.5 to 3.0 p.s.i. in excess of the ground water pressure at the top of the sewer in 5 minutes for an 8" line, 6.5 minutes for a 10" line or 7 minutes for a 12" line.

Infiltration: The line shall not exceed 50 gallons per inch of internal pipe diameter per mile per day and shall be used only when ground water level is above the top of the pipe throughout the length of the pipe.

Exfiltration: The line shall not allow water exfiltration for any length of the sewer pipe between manholes to exceed 50 gallons per inch of internal pipe diameter per mile of pipe in 24 hours. The maximum water pressure at any point shall not be 2'-0" above ground water at the top end of the run or over the top of the pipe.

Deflection testing: The maximum allowable vertical inside diameter reduction shall be 5.0%. The contractor shall perform deflection tests of pipe runs selected by the engineer. The contractor shall pull a mandrell of proper size through the line (the line must be thoroughly cleaned before this test).

At the time of completion of the work the contractor shall furnish all material, labor and equipment needed for the tests and shall clean lines if required before testing, at no expense to the city. If any selected sewer line is found defect, all sewer lines on the same project shall be given the same test.

The City may make any of the above tests of the lines at any time before 12 months have passed since the contractor hastested the line and completed the work on the subdivision or construction contract project. If found defective, upon notice of the city, the contractor may be present for a repeat of the test.

All lines found defective by any test shall be repaired or corrected in a manner approved by the city, by the developer of the subdivision or by the contractor of the contractor was doing the work under contract to the city.

MATERIAL REQUIREMENTS

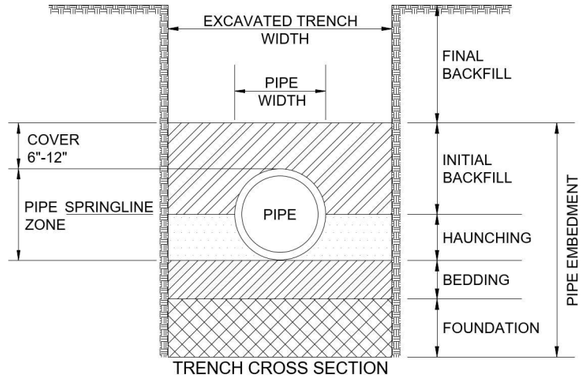
Polyvinyl chloride (PVC) sewer pipe and fittings shall meet the requirements of ASTM D-3034 and the requirements stated herein.

The PVC sewer pipe shall use a flexible gasketed joining system. The integral bell shall have a gasket between in and spigot end. The gasket shall be the only element depended upon to make the joint flexible and water-tight.

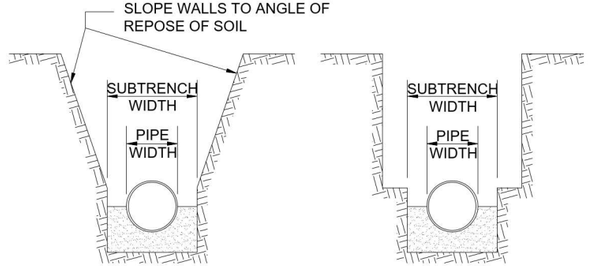
Gaskets shall be made of rubber and meet the requirements of ASTM F-477, D-1869, C-361 or C-443.

The lubricant used for assembly shall have no detrimental effect on the gasket of on the pipe.

PVC pipe and fittings shall meet the dimension, physical, property and marking requirements of UNI-B-4-77 recommended specification.



TRENCH CROSS SECTION



EXAMPLES OF SUBTRENCH

Printed on 10% Post-Consumer Recycled Content Paper

AECOM

PROJECT

CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT

ELYRIA, OH 44035

CLIENT

CITY OF ELYRIA

DEPARTMENT OF PUBLIC SERVICE
131 COURT STREET
ELYRIA, OH 44035

CONSULTANT

AECOM
1300 EAST 9TH STREET, SUITE 500
CLEVELAND, OH 44114
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www.aecom.com

REGISTRATION

ISSUE/REVISION

I/R	DATE	DESCRIPTION
A	1/7/2026	BID DOCUMENTS

PROJECT NUMBER

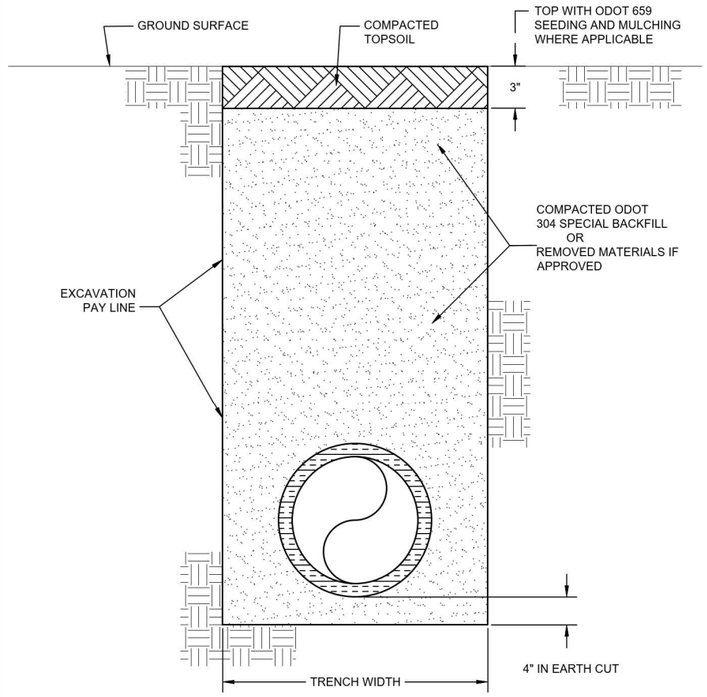
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SHEET TITLE

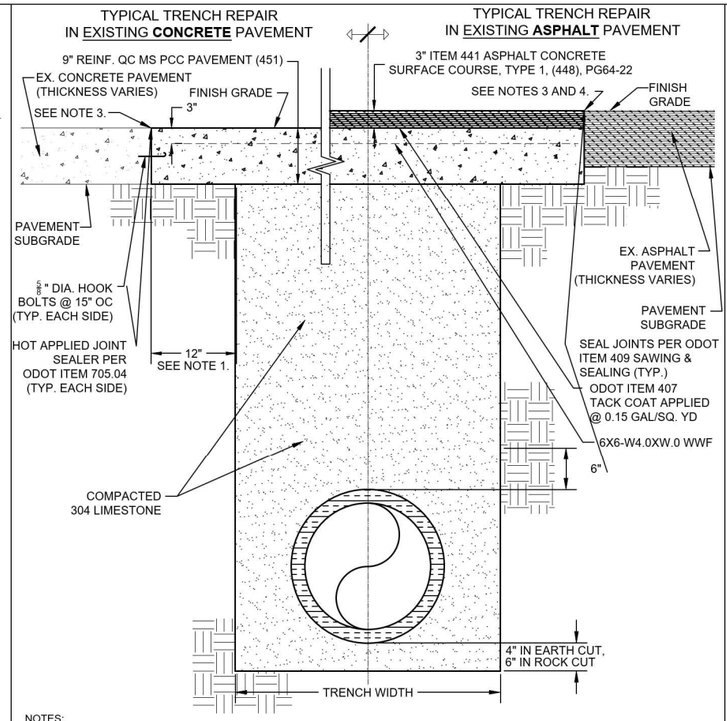
CITY OF ELYRIA DETAILS
1-600a-e

SHEET NUMBER

DET3



TYPICAL TRENCH REPAIR IN EXISTING **CONCRETE** PAVEMENT



NOTES:
1. WHEN TRENCH AND EXCAVATION IS IN AN EXISTING PAVED STREET, DRIVE APPROACH, OR OTHER PAVED SURFACE, REPLACE PAVEMENT A MINIMUM OF 12" ON EACH SIDE OF TRENCH, AS DIRECTED BY THE ENGINEER. HOOKBOLTS SHALL BE USED TO ANCHOR CONCRETE TRENCH CAP WITH EXISTING (CONCRETE) PAVEMENT
2. PAVEMENT SECTION SHALL BE AT LEAST EQUIVALENT TO EXISTING PAVEMENT, BUT IN NO CASE LESS THAN THAT SHOWN IN DETAIL.
3. DIAMOND SAW CUT EXISTING PAVEMENT AND RE-PAVE TO A CLEAN, STRAIGHT EDGE (TYP.). DO NOT REMOVE PAVEMENT OUTSIDE OF THE TRENCH NEAT LINE UNTIL AFTER THE TRENCH HAS BEEN BACKFILLED. THE EXISTING CONCRETE SHALL BE SAWED BEFORE REMOVING SO AS TO PRESERVE A NEAT LINE FOR THE ENTIRE LENGTH OF THE TRENCH ON EACH SIDE.
4. ALL VERTICAL EDGES OF EXISTING ASPHALT CONCRETE SHALL BE TACK COATED. SEAL JOINT WITH HOT ASPHALT CEMENT, FOR 448.

DWG. BY:	DATE:
--	DEC 2013

REV. NO.	REV. DATE	REV. BY

TRENCH REPAIR SECTION IN GRASS AREAS

CITY OF ELYRIA
DEPARTMENT OF ENGINEERING SERVICES
Division of Engineering, Design and Construction

SCALE: NONE
STANDARD DRAWING NO. **TR-2**
1 OF 1

TYPICAL TRENCH REPAIR IN EXISTING **ASPHALT** PAVEMENT

NOTES:
1. WHEN TRENCH AND EXCAVATION IS IN AN EXISTING PAVED STREET, DRIVE APPROACH, OR OTHER PAVED SURFACE, REPLACE PAVEMENT A MINIMUM OF 12" ON EACH SIDE OF TRENCH, AS DIRECTED BY THE ENGINEER. HOOKBOLTS SHALL BE USED TO ANCHOR CONCRETE TRENCH CAP WITH EXISTING (CONCRETE) PAVEMENT
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4. ALL VERTICAL EDGES OF EXISTING ASPHALT CONCRETE SHALL BE TACK COATED. SEAL JOINT WITH HOT ASPHALT CEMENT, FOR 448.

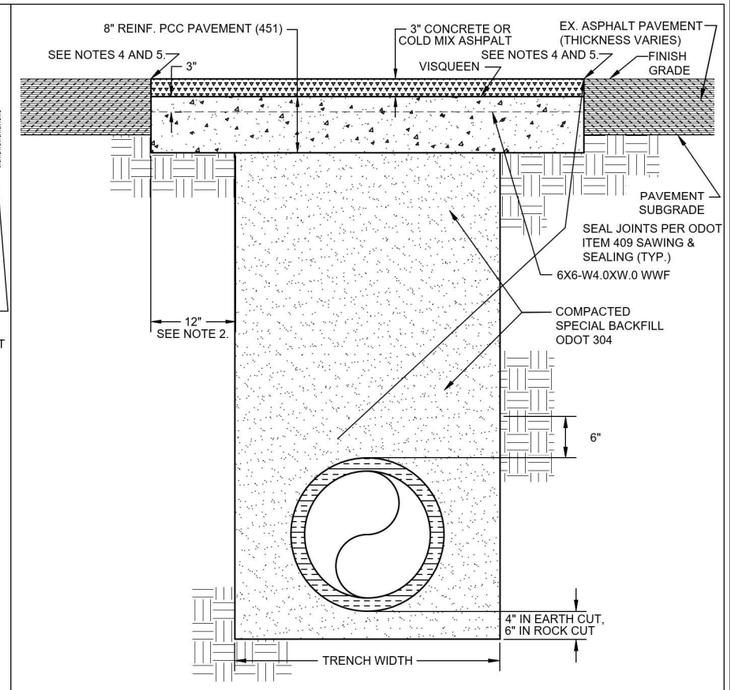
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--	DEC 2013

REV. NO.	REV. DATE	REV. BY
	DEC 2025	

TRENCH REPAIR SECTION IN EXISTING PAVEMENT

CITY OF ELYRIA
DEPARTMENT OF ENGINEERING SERVICES
Division of Engineering, Design and Construction

SCALE: NONE
STANDARD DRAWING NO. **TR-4**
1 OF 1



NOTES:
1. TEMPORARY WEARING SURFACE SHOULD ONLY BE INSTALLED WHEN INCLEMENT WEATHER DOES NOT PERMIT THE PROPER PERMANENT TRENCH REPAIR TO BE MADE.
2. WHEN TRENCH AND EXCAVATION IS IN AN EXISTING PAVED STREET, DRIVE APPROACH, OR OTHER PAVED SURFACE, REPLACE PAVEMENT A MINIMUM OF 12" ON EACH SIDE OF TRENCH, AS DIRECTED BY THE ENGINEER. HOOKBOLTS SHALL BE USED TO ANCHOR CONCRETE TRENCH CAP WITH EXISTING (CONCRETE) PAVEMENT
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5. ALL VERTICAL EDGES OF EXISTING ASPHALT CONCRETE SHALL BE TACK COATED. SEAL JOINT WITH HOT ASPHALT CEMENT, FOR 448.

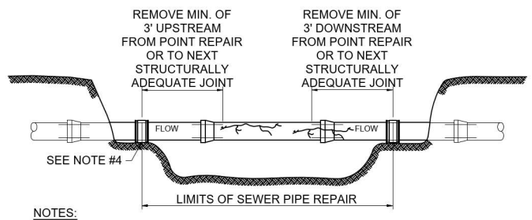
DWG. BY:	DATE:
--	DEC 2013

REV. NO.	REV. DATE	REV. BY
	DEC 2025	

TRENCH PAVING SECTION TEMPORARY WEARING SURFACE

CITY OF ELYRIA
DEPARTMENT OF ENGINEERING SERVICES
Division of Engineering, Design and Construction

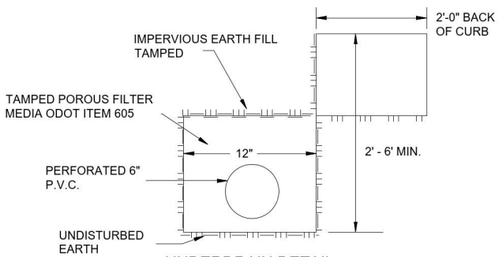
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STANDARD DRAWING NO. **TR-5**
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NOTES:

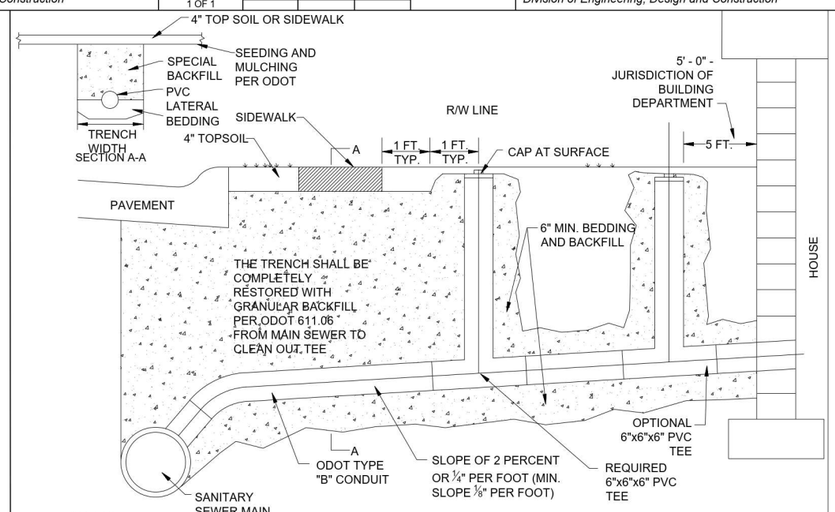
1. BEDDING AND BACKFILL IN ACCORDANCE WITH CMSC ITEM 901 (SEE AA-S149 AND AA-S151). OPEN CUT REPAIRS WITHIN RIGHT OF WAY OR PAVEMENT SHALL USE COMPACTED GRANULAR BACKFILL, CMS ITEM 912.
2. CONTRACTOR SHALL ARRANGE FOR ACCESS TO POINT REPAIR LOCATION AND WORK WITHIN EXISTING EASEMENT.
3. CONTRACTOR SHALL VERIFY LOCATION AND LENGTH OF POINT REPAIR USING CCTV TAPES AND LOGS AND FIELD INVESTIGATIONS. THE UNIT PRICE OF POINT REPAIR SHALL INCLUDE ALL REMOVALS, ACTUAL REQUIRED LENGTH AT POINT REPAIR, AND ALL RESTORATION WORK. POINT REPAIR STATIONS SHOWN ON THE PLANS ARE APPROXIMATE.
4. PLASTIC TO PLASTIC REPAIRS SHALL REQUIRE A HARD FITTING. FOR ALL OTHER PIPE MATERIALS THE FITTINGS SHALL BE FERNCO COUPLINGS SERIES #5000 OR APPROVED EQUAL.
5. CONCRETE ENCASEMENT SHALL NOT BE USED ON FLEXIBLE PIPE POINT REPAIRS UNLESS THE ENTIRE SEWER SEGMENT WAS PREVIOUSLY CONCRETE ENCASED.

OPEN CUT POINT REPAIR DETAIL
N.T.S.



UNDERDRAIN DETAIL

NOTES:
1) PIPE SHALL BE 6" SMOOTH WALL PERFORATED PVC, ODOT 707.41.
2) BACKFILL TRENCH WITH NO.8 OR 9 LIMESTONE OR GRAVEL.
3) LINE UNDERDRAIN TRENCH WITH FILTER FABRIC ODOT 712.09, TYPE A. FILTER FABRIC SHALL COMPLETELY SURROUND AGGREGATE AND OVERLAP AT TOP OF TRENCH FOR THE FULL TRENCH WIDTH.



NOTES:
1) POLYVINYL CHLORIDE (PVC) PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM D-3034
2) CLEANOUT LOCATION MAY VARY TO A MAXIMUM OF 2 FEET BEYOND RIGHT-OF-WAY LINE.
3) BEDDING AND BACKFILL SHALL BE LIMESTONE AGGREGATE MEETING THE GRADATION OF ODOT\ 304 AGGREGATE BASE AND INSTALLED AS PER ODOT 611.06 SPECIFICATIONS.

SCALE: NONE
STANDARD DRAWING NO. **1-606**
1 OF 1

SANITARY LATERAL

CITY OF ELYRIA
ENGINEERING DEPARTMENT

DWG. BY:	DATE:
--	NOV 2018

REV. NO.	REV. DATE	REV. BY

AECOM

PROJECT

CONSENT DECREE CONTROL MEASURE #8 PHASE #1 SEWER REHABILITATION PROJECT
ELYRIA, OH 44035

CLIENT

CITY OF ELYRIA
DEPARTMENT OF PUBLIC SERVICE
131 COURT STREET
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REGISTRATION

ISSUE/REVISION

A	1/7/2026	BID DOCUMENTS
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60332065

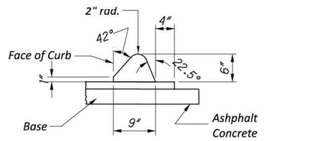
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TRENCH SECTIONS, UNDERDRAIN AND SANITARY LATERAL

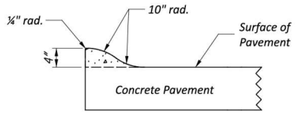
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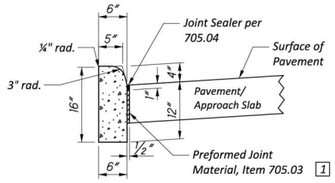
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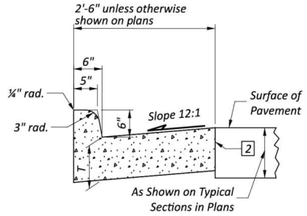
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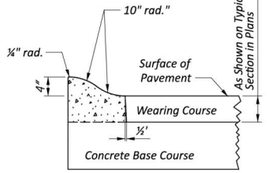
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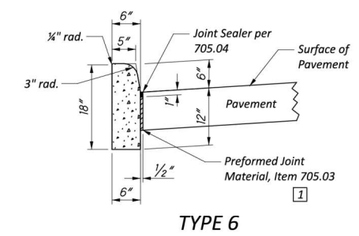
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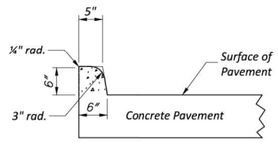
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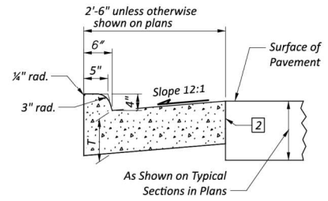
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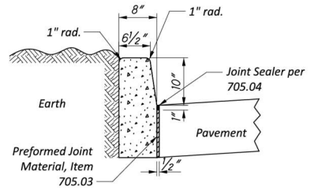
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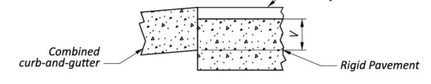
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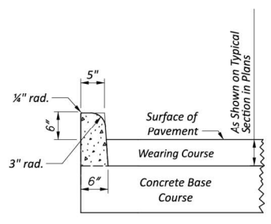


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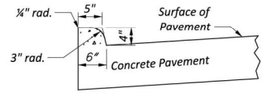


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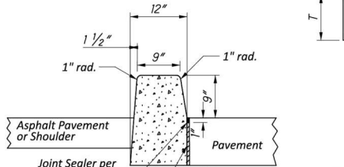




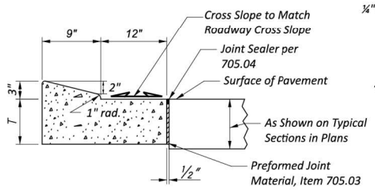
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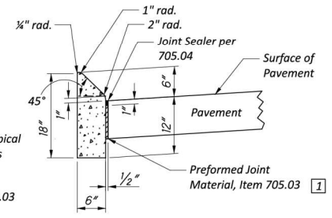
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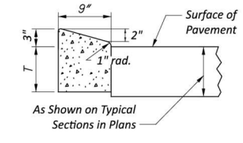
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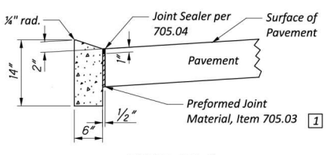
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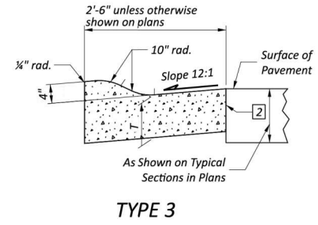
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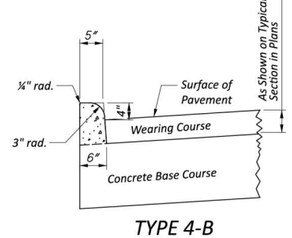
TYPE 10



TYPE 10-B



TYPE 3



TYPE 4-B

NOTES

GENERAL: This drawing shows alternate types of curb that may be used on various types of pavement. The typical section of the project shows the type to be used, also the thickness of the edge of the pavement or the edge of the curb and gutter section.

JOINTS: 1" expansion joints shall extend up to the top of the curb and shall be constructed in the curb and gutter section in such a manner that the joint seal will extend the full width of the gutter and into the curb face a sufficient distance to seal the joint to an elevation of at least 2" above the flow line of the gutter. Dowel bars shall be used in the curb and gutter section at expansion joints and to the surface of the pavement.

Transverse expansion joint material shall meet the requirements of Item 705.03.

GUTTER PLATE THICKNESS: Thickness of gutter plate "T" shall be 9" unless otherwise shown on the plans.

TOLERANCES: Dimensional tolerances are as follows:

Curbs: -1/32" to +¼".
Gutters: 0 to +½".

LEGEND

1 *Expansion joint material and joint sealer are not required for the portion of the curb that is adjacent to a flexible pavement type. Both materials are required, as detailed, for the full height of rigid pavement and concrete bases.*

2 *Butt joints shall be provided between combined curb-and-gutter and new or existing rigid pavements, with tie bars or hook bolts provided at intervals of 5'. See SCD BP-2.1 for details of tie bars and hook bolts.*

If the combined curb-and-gutter adjoins a new rigid base or an existing rigid base or pavement that is to be surfaced with asphalt concrete, a butt joint shall also be provided. However, tie bars or hook bolts shall be omitted when the vertical overlap ("V" in detail below) between the curb-and-gutter and rigid pavement is less than 7".

BP-5.1

MODEL: Sheet PAPERSIZE: 34x22 (in.) DATE: 3/24/2025 TIME: 8:05:08 AM USER: ahollow1
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OFFICE OF ROADWAY ENGINEERING

REVISIONS

01-21-2022
07-15-2022
01-17-2025
07-18-2025

STDS ENGINEER
D. Fisher

STATE OF OHIO OFFICE OF ROADWAY ENGINEERING ADMINISTRATOR
Adam Koenig

STANDARD ROADWAY CONSTRUCTION DRAWING
CONCRETE CURBS AND
COMBINED CURB AND GUTTER

DESIGN AGENCY

SCD NUMBER
BP-5.1

SHEET P.1 | TOTAL 1

AECOM

PROJECT

CONSENT DECREE
CONTROL MEASURE #8
PHASE #1 SEWER
REHABILITATION
PROJECT
ELYRIA, OH 44035

CLIENT

CITY OF ELYRIA
DEPARTMENT OF PUBLIC SERVICE
131 COURT STREET
ELYRIA, OH 44035

CONSULTANT

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REGISTRATION

ISSUE/REVISION

A	1/7/2026	BID DOCUMENTS
I/R	DATE	DESCRIPTION

PROJECT NUMBER

60332065

SHEET TITLE

ODOT BP-5.1 DETAILS
CONCRETE CURBS AND
COMBINED CURB AND GUTTER

SHEET NUMBER

DET5

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