ADDENDUM NO. 1
TO
PROJECT MANUAL AND CONTRACT DRAWINGS
FOR
ORANGE WATER AND SEWER AUTHORITY
GRAVITY SEWER REHABILITATION (GSR) PROGRAM, GROUP 1 PACKAGE
(MINI BASIN 23)

Issued: April 28, 2026

To: Official Plan Holders

The following revisions, additions, and clarifications are hereby made part of the Contract Documents for the above-referenced project and shall be taken into account in the preparation of all Bids and the execution of all Work. All items in conflict with the Addenda are hereby deleted. This addendum is made part of the Contract Documents and shall be noted on the proposal.

I. PROJECT MANUAL

Ad-1-I-1. REPLACE Section 00 01 01 with the attached.
Ad-1-I-2. REPLACE Section 00 01 10 with the attached.
Ad-1-I-3. REPLACE Section 00 11 16 with the attached.
Ad-1-I-4. REPLACE Section 00 21 15 with the attached.
Ad-1-I-5. REPLACE Section 00 41 44 with the attached.
Ad-1-I-6. REPLACE Section 00 52 15 with the attached.
Ad-1-I-7. REPLACE Section 00 52 16 with the attached.
Ad-1-I-8. REPLACE Section 00 91 13 with the attached.
Ad-1-I-9. REPLACE Section 01 22 00 with the attached.
Ad-1-I-10. DELETE Section 01 45 25 in its entirety.
Ad-1-I-11. DELETE Section 01 73 29 in its entirety.
Ad-1-I-12. REPLACE Section 01 74 00 with the attached.
Ad-1-I-13. REPLACE Section 01 77 19 with the attached.
Ad-1-I-14. REPLACE Section 01 78 36 with the attached.
Ad-1-I-15. REPLACE Section 01 78 39 with the attached.
Ad-1-I-16. REPLACE Section 33 01 36 with the attached.
Ad-1-I-17. REPLACE Section 33 05 16 with the attached.
Ad-1-I-18. REPLACE Section 33 05 31 with the attached.
Ad-1-I-19. REPLACE Section 33 31 00 with the attached.
Ad-1-I-20. REPLACE Section 40 05 31 with the attached.

II. CONTRACT DRAWINGS

Ad-1-II-1. REPLACE G-01 with the attached.
Ad-1-II-2. REPLACE G-03 with the attached.
Ad-1-II-3. REPLACE C-01 with the attached.
Ad-1-II-4. REPLACE C-03 with the attached.
Ad-1-II-5. REPLACE C-04 with the attached.
Ad-1-II-6. REPLACE C-05 with the attached.
Ad-1-II-7. REPLACE C-06 with the attached.

Ad-1-II-8. REPLACE C-07 with the attached.
Ad-1-II-9. REPLACE C-08 with the attached.
Ad-1-II-10. REPLACE C-11 with the attached.
Ad-1-II-11. REPLACE C-12 with the attached.
Ad-1-II-12. REPLACE C-13 with the attached.
Ad-1-II-13. REPLACE C-14 with the attached.
Ad-1-II-14. REPLACE C-15 with the attached.
Ad-1-II-15. REPLACE C-17 with the attached.
Ad-1-II-16. REPLACE C-19 with the attached.

III. QUESTIONS AND ANSWERS

Ad-1-III-1. Question: Will addendum be posted to the site or emailed out?
Answer: Addendum will be posted to the file sharing website, and a notification email will be sent to official plan holders.

IV. CLARIFICATIONS

Ad-1-IV-1. None

Respectfully submitted,

HDR Engineering, Inc. of the Carolinas



Orange Water and Sewer Authority

Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package

Mini Basin 23

Construction Documents
Project Manual

Addendum 1

April 29, 2026



HDR Project No. 10387195

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TABLE OF CONTENTS

DIVISION 00 — PROCUREMENT AND CONTRACTING REQUIREMENTS
00 11 16 - Advertisement for Bids
00 21 15 - Instructions to Bidders
00 41 44 - Proposal - Unit Price
00 41 44A - Bidders Checklist
00 52 15 - Agreement
00 52 16 - Form of Submittals
00 72 13 - C700 EJCDC General Conditions
00 91 13 - Addenda

DIVISION 01 — GENERAL REQUIREMENTS
01 11 00 - SUMMARY OF WORK
01 21 00 - ALLOWANCES
01 22 00 - MEASUREMENT AND PAYMENT
01 23 00 - ALTERNATES
01 25 00 - SUBSTITUTION PROCEDURES
01 26 00 - CONTRACT MODIFICATION PROCEDURES
01 29 73 - SCHEDULE OF VALUES
01 29 76 - PROGRESS PAYMENT PROCEDURES
01 31 19 - PROJECT MEETINGS
01 31 26 - ELECTRONIC COMMUNICATION PROTOCOLS
01 32 16 - CONSTRUCTION PROGRESS SCHEDULE
01 33 00 - SUBMITTAL PROCEDURES
01 55 26 - TRAFFIC CONTROL
01 65 00 - PRODUCT DELIVERY REQUIREMENTS
01 66 00 - PRODUCT STORAGE AND HANDLING REQUIREMENTS
01 71 14 - MOBILIZATION AND DEMOBILIZATION
01 71 33 - PROTECTION OF THE WORK AND PROPERTY
01 74 00 - CLEANING
01 77 19 - CLOSEOUT REQUIREMENTS
01 78 36 - WARRANTIES
01 78 39 - PROJECT RECORD DOCUMENTS

DIVISION 31 — EARTHWORK
31 10 00 - SITE CLEARING
31 22 19 - FINISH GRADING
31 23 16.43 - TEMPORARY SUPPORT OF EXCAVATIONS
31 23 19 - DEWATERING
31 23 33 - TRENCHING, BACKFILLING AND COMPACTION OF UTILITIES

DIVISION 32 — EXTERIOR IMPROVEMENTS
32 92 00 - SEEDING, SODDING AND LANDSCAPING

DIVISION 33 — UTILITIES
33 01 16 - INTERNAL INSPECTION OF SEWERS
33 01 32 - SEWER PIPE AND STRUCTURE CLEANING
33 01 33 - TEMPORARY BYPASS PUMPING
33 01 36 - MANHOLE REHABILITATION
33 01 37 - CURED-IN-PLACE PIPE (CIPP) REHABILITATION (SANITARY SEWER)
33 05 16 - PRECAST CONCRETE UTILITY STRUCTURES
33 05 31 - POINT REPAIRS OF GRAVITY SEWERS
33 31 00 - SANITARY SEWER PIPE INSTALLATION BY PIPE BURSTING
33 31 01 - ABANDONMENT OF SEWER MAINS

DIVISION 40 — PROCESS INTERCONNECTIONS
40 05 00 - PIPE AND PIPE FITTINGS - BASIC REQUIREMENTS
40 05 19 - PIPE - DUCTILE

40 05 31 - PIPE - PLASTIC
40 05 33 - HIGH DENSITY POLYETHYLENE (HDPE) PIPE

DOCUMENT 00 11 16

ADVERTISEMENT FOR BIDS

CIP No.: 376-01

Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)

Owner: ORANGE WATER AND SEWER AUTHORITY (OWASA)
400 JONES FERRY ROAD
CARRBORO, NORTH CAROLINA 27510

Date: April 29, 2026

Pursuant to Section 143-129 of the General Statutes of North Carolina, sealed Bids will be received by Orange Water and Sewer Authority from Bidders until 3:00 P.M., local time, on May 21, 2026 for CIP No.: 376-01, Project: "**Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)**" in the Administrative Offices, 400 Jones Ferry Road, Carrboro, North Carolina 27510, at which time the Bids received will be opened and read aloud.

Bids will be received for a Unit Price General Construction Contract. The Contractor and all Subcontractors shall have valid North Carolina General Contractor's Licenses for the type and value of the work to be performed.

The Project base bid consists of furnishing all materials, labor, equipment, tools, etc. unless otherwise specified, for the rehabilitation of approximately 1.5 miles of gravity sewer pipe, ranging in size from 8-inch to 12-inch diameter, through a combination of approaches including but not limited to open cut point repairs, cured-in-place pipe lining, and pipe bursting. Work also includes lateral reinstatements, bypass pumping if needed, manhole rehabilitation identified as needed based on field conditions, traffic control if needed, restoring ground and roadway surfaces, and all associated appurtenances as described in the Specifications and as shown on the Drawings.

The Project add alternate bid consists of furnishing all materials, labor, equipment, tools, etc. unless otherwise specified for the complete and operable rehabilitation of 8-inch gravity sewer through cured-in-place pipe patches, associated lateral reinstatements, and all associated appurtenances as described in the Specifications and as shown on the Drawings.

The foregoing description shall not be construed as a complete description of all work required.

Beginning on April 10, 2026, the Contract Documents will be available electronically. Electronic copies will be transmitted to prospective bidders by request through email, free of charge, by emailing Stephanie Holloman at stephanie.holloman@hdrinc.com.

Bidders are strongly encouraged to attend a non-mandatory Pre-Bid Conference at 3:00 P.M., local time, on April 29, 2026 in the OWASA Administration Offices, 400 Jones Ferry Road, Carrboro, North Carolina. Attendance will be limited to two representatives from each firm.

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)
DATE: April 29, 2026

Orange Water and Sewer Authority has adopted a minimum ten (10%) percent goal for participation by minority businesses in the total value of the work for this project in accordance with Section 143-128.2 of the General Statutes of North Carolina.

Each Bidder shall be licensed under Chapter 87 of the North Carolina General Statutes. Bidders are notified that "An Act to Regulate the Practice of General Contracting," was ratified by the General Assembly of North Carolina on March 10, 1925, and that this Act and subsequent Amendments, will be observed in receiving and awarding Contracts.

Each bidder is required to submit a Non-Collusion Affidavit pursuant to Section 133-30 of the General Statutes of North Carolina.

To ensure that all Bidders are kept up to date on any Addenda, changes, or information notices, please send an email to Stephanie Holloman at stephanie.holloman@hdrinc.com indicating your intention to Bid. Failure to complete this step may render your Bid as non-responsive.

Each Bidder is advised that the Work may be inspected and supervised by an Engineer or firm under the direction of Orange Water and Sewer Authority. The Engineer or firm may also be involved in the identification of specific repair areas and the proposed method of repairs for the Work.

Orange Water and Sewer Authority requires the Project to be at Substantial Completion within 210 consecutive calendar days from date of Notice to Proceed and at Final Completion 240 consecutive calendar days from date of Notice to Proceed.

No Bid shall be considered or accepted unless at the time of its filing the same shall be accompanied by a deposit of a certified or cashier's check drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation (FDIC), in an amount equal to five percent (5%) of the amount of the Bid. The check shall be made payable to Orange Water and Sewer Authority. Said deposit shall guarantee that the Contract will be entered into by the successful Bidder if the Award is made. Such deposit of certified or cashier's check may be held by Orange Water and Sewer Authority until the successful Bidder has executed and delivered the Contract Documents, including performance and payment bond, to Orange Water and Sewer Authority and returned or kept in accordance with North Carolina General Statute 143-129.

In lieu of the certified or cashier's check deposit mentioned above, the Bidder may file a Bid Bond in the same amount executed by a corporate surety authorized to execute such bonds in North Carolina and conditioned as provided by North Carolina General Statute 143-129 and on the form(s) found in the Proposal section, or on file with the Engineer. Bid Bond forms enclosed as part of the Bidding Documents must be properly executed at the time Bids are submitted before a Bid will be considered. Properly executed Power of Attorney of the corporate surety's agent shall accompany such bond and be attached to the page provided therefore in the Bidding Documents.

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)
DATE: April 29, 2026

Bids shall be submitted under a condition of irrevocability, except as required by law, for a period of or ninety (90) calendar days after the Bid opening.

Orange Water and Sewer Authority reserves the right to accept or reject any or all Bids, to waive any and all informalities, and to disregard all nonconforming or conditional Bids or counter Bids, and to accept the Bid that will be in the best interest of Orange Water and Sewer Authority.

ORANGE WATER AND SEWER AUTHORITY
Bill T. Rosa, Project Manager
April 10, 2026

-END OF DOCUMENT-

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DOCUMENT 00 21 15

INSTRUCTIONS TO BIDDERS

ARTICLE 1 - DEFINED TERMS

1.01 Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract, EJCDC C-700 (2013 edition) and modified by Orange Water and Sewer Authority (Copyright 2013) shall have the meanings assigned to them in the General Conditions as modified, changed, added to or deleted by the General Conditions.

A. Issuing Office - The office at which the Bidding Documents are to be received.

B. The term "Successful Bidder" means the lowest, qualified, responsive and responsible Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an Award.

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.01 The Bidding Documents are identified as "Project Manual including Bidding Documents, Contract Documents, and Technical Specifications for CIP No. 376-01, Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)".

2.02 Beginning on April 10, 2026, the Contract Documents will be available electronically. Electronic copies will be transmitted to prospective bidders by request through email, free of charge, by emailing Stephanie Holloman at stephanie.holloman@hdrinc.com.

2.03 Not Used.

2.04 To ensure that all Bidders are kept up-to-date on any Addenda, changes, or information notices, please send an e-mail to: stephanie.holloman@hdrinc.com indicating your intention to Bid. Failure to complete this step may render your Bid as non-responsive.

2.05 Complete sets of Bidding Documents shall be used in preparing Bids; neither Orange Water and Sewer Authority nor the Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.06 Upon receipt of Bidding Documents, Bidder shall verify that the Bidding Documents are complete. The Bidder shall notify the Engineer if they have received incomplete Bidding Documents.

2.07 Orange Water and Sewer Authority and Engineer, in making copies of the Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

3.01 The Bidder shall demonstrate the ability to complete a majority of all portions of the Contract using equipment and personnel owned and employed by the Bidder. The Bidder shall include the following information in the Bid in the spaces provided:

A. The number of years the Bidder has been regularly engaged in similar Contract municipal work and a list of projects they have completed with their equipment and personnel.

B. A list of the Bidder's personnel experienced to do the Work, including the Superintendent to be in charge of the Work, including the length of their experience with this type of municipal work.

C. A list of the Bidder's equipment in good condition and suitable for completion of the project.

D. That the Bidder will have available to do the Work at the proper time or times, adequate equipment and facilities listing such equipment and facilities in such detail that they can be quickly and accurately checked.

E. That the Bidder has ample repair parts and supplies to maintain all equipment and facilities properly and with a minimum of delay.

F. If the Bidder is a corporation, the names of all corporate officers and the name of the executive who will give their personal attention to the Work.

G. Detailed financial information relating to the resources of the Bidder.

H. The Bidder shall perform Work amounting to at least 60% of the Contract, using its own personnel and equipment (owned or rented). No portion of the Contract shall be sublet, assigned, or otherwise disposed of without the expressed written consent of Orange Water and Sewer Authority. If the Bidder fails to demonstrate to Orange Water and Sewer Authority in its Bid submittal information that it has the ability to perform the specified percentage of the Work with its own personnel and equipment, its Bid may be considered non-responsive. The Bidder shall submit with its Bid, data supporting its ability to comply with this requirement.

3.02 Not Used.

3.03 If the Bidder fails to demonstrate the ability to complete a majority of all portions of the Contract with equipment and personnel owned and employed by the Bidder, the Bid may be considered non-responsive.

3.04 The Bidder shall be licensed under Chapter 87 of the North Carolina General Statutes as a General Contractor.

ARTICLE 4 - SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 Site and Other Areas

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Orange Water and Sewer Authority for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, shall be obtained and paid for by Contractor.

4.02 Existing Site Conditions

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. Article 5 of the General Conditions identifies:

a. Those reports known to Orange Water and Sewer Authority of explorations and tests of subsurface conditions at or adjacent to the Site.

b. Those drawings known to Orange Water and Sewer Authority of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

c. Those reports and drawings known to Orange Water and Sewer Authority relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.

d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any Bidder upon request. These reports and drawings are not to be considered part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely as provided in the General Conditions, has been identified and established in the General Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the General Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions shall apply.

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Orange Water and Sewer Authority and Engineer by owners of such Underground Facilities, including Orange Water and Sewer Authority, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions

appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the Scope of Work, appear in Paragraph 5.06 of the General Conditions.

4.03 Site Visit and Testing by Bidders

A. On request, and to the extent Orange Water and Sewer Authority has control over the Site, and schedule permitting, Orange Water and Sewer Authority will provide Bidder access to the Site to conduct such site visits, additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

B. Orange Water and Sewer Authority will not have any obligation to grant such access if doing so is not practical because of existing operations, security, or safety concerns, or restraints on Orange Water and Sewer Authority's authority regarding the Site.

C. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

D. All requests for access to the Site must be received forty-eight (48) hours prior to the preferred time of access. **All Site access requests must be made in writing to and coordinated by the Orange Water and Sewer Authority Project Manager Bill T Rosa via email to brosa@owasa.org.**

E. The Bidder shall not access any Site without written permission from Orange Water and Sewer Authority. The Bidder shall be responsible for any damage (including damage to any underground utility and acceptable restoration) as a result of additional subsurface investigations.

4.04 Orange Water and Sewer Authority's Safety Program

A. Site visits and Work at the Site are to be in accordance with Orange Water and Sewer Authority's safety program. As the General Conditions indicate, an Owner's safety program exists.

4.05 Other Work at the Site

A. Reference is made to the General Conditions for the identification of the general nature of other Work of which Orange Water and Sewer Authority is aware (if any) that is to be performed at the Site by Orange Water and Sewer Authority or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

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

A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;

B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state, and local, Laws and Regulations, ordinances or rules that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the General Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings;

E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;

F. obtain and carefully study (or accept consequences of not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying and specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;

G. agree based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

H. become aware of the general nature of the Work to be performed by Orange Water and Sewer Authority and others at the Site that relates to the Work as indicated in the Bidding Documents;

I. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and

K. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

L. the submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this Article 5, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performing and furnishing of the Work.

ARTICLE 6 - PRE-BID CONFERENCE

6.01 Bidders are strongly encouraged to attend a non-mandatory Pre-Bid Conference at 3:00 P.M., local time, on April 29, 2026 in the OWASA Administration Offices, 400 Jones Ferry Road, Carrboro, North Carolina. Attendance will be limited to two representatives from each firm.

Representatives of Orange Water and Sewer Authority and the Engineer will be present to discuss the Project. Bidders are strongly encouraged to participate in the conference. Engineer will transmit to all prospective Bidders of record, such Addenda as Engineer considers necessary in response to questions arising from the Pre-Bid Conference. Oral statements may not be relied upon and shall not be binding or legally effective. **The deadline for bidder questions is 5:00 PM on May 15, 2026.**

6.02 Bidder questions pertaining to the Work and M/WBE participation will be addressed at the Pre-Bid Conference.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents shall be submitted in writing to the Engineer via email only to: stephanie.holloman@hdrinc.com. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda emailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. All Addenda will also be posted at least twenty-four (24) hours before Bids are opened. Questions received less than five (5) days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications shall be without legal effect.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Orange Water and Sewer Authority or Engineer.

7.03 **It shall be the Bidder's sole responsibility to make inquiry as to the Addenda issued.** All Addenda shall be bound and securely attached to the Bidding Documents and submitted with the Bid. All such Addenda shall become a part of the Contract Documents and Bidder shall be bound by such Addenda, whether or not received by the Bidder.

ARTICLE 8 - BID SECURITY

8.01 A Bid must be accompanied by a Bid security made payable to Orange Water and Sewer Authority in an amount equal to five (5%) percent of Bidder’s maximum Bid price (if alternates determined by adding the base bid and all alternates), and in the form of a certified check, or bank money order, drawn on a bank or trust company insured by the Federal Deposit Insurance Corporation (FDIC), or a Bid Bond (on the form included in the Bidding Documents) issued by a Surety meeting the requirements of Article 6 of the General Conditions and Article 8.02 herein-below. No Bid shall be considered or accepted unless at the time of its filing the same shall be accompanied by a Bid security. Said Bid security shall guarantee that the Contract shall be entered into by the successful Bidder if the Award is made.

8.02 In lieu of the certified check, bank money order deposit mentioned above, the Bidder may file a Bid Bond in the same amount executed by a corporate surety authorized to execute such bonds in North Carolina and conditioned as provided by North Carolina General Statute 143-129 and in the Bid Bond form found in the Proposal section, or on file with the Engineer. Bid Bond forms shall be properly executed at the time Bids are submitted before Bid will be considered. Properly executed Power of Attorney of the corporate surety's agent shall accompany such Bid Bond, and be attached to the page provided therefore in the Contract Documents.

8.03 The Bid security of the apparent Successful Bidder shall be retained until Orange Water and Sewer Authority officially Awards Contract to such Bidder, and such Bidder has executed the Contract Documents, furnished the required Contract security and met the other conditions of the Notice to Award, whereupon the Bid Security will be released. If the successful Bidder fails to execute and deliver the Contract Documents and furnish the required Contract security within fifteen (15) calendar days after the Notice of Award,

Orange Water and Sewer Authority may consider Bidder to be in default, annul the Notice of Award, and the Bid Security of that Bidder will be forfeited. The Bid security of other Bidders whom Orange Water and Sewer Authority believes to have a reasonable chance of receiving the Award may be retained by Orange Water and Sewer Authority until the earlier of seven (7) days after the Effective Date of the Agreement or ninety-one (91) calendar days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

ARTICLE 9 - CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be substantially completed (Contract Time) and ready for final payment are set forth in the Agreement. The Bidder shall commence Work on the date specified in the Notice to Proceed and shall complete the Work within the stipulated Contract Time.

ARTICLE 10 - LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 - SUBSTITUTE AND “OR-EQUAL” ITEMS

11.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration during the Bidding and Contract Award process of possible substitute or “or-equal” items. In cases in which the Contract allows the Contractor to request that Engineer authorize the use of a substitute or “or-equal” item of material or equipment, application for such acceptance may not be made to and will not be considered by Engineer until after the Effective Date of the Contract.

11.02 The burden of proof of the merit of the proposed item is upon Bidder. The Engineer’s decision of approval or disapproval of a proposed item will be final.

11.03 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Non-Collusion Affidavit Form for all Subcontractors shall be filed with Orange Water and Sewer Authority within five (5) days after the Bid opening.

12.02 All Bidders are required to complete the M/WBE Participation Documents and submit the completed forms with its Bid.

12.03 All questions regarding M/WBE documents or requirements may be directed to the OWASA Finance and Procurement Department at (919) 968-4421.

12.04 Orange Water and Sewer Authority reserves the right to reject a proposed Subcontractor for reasonable cause.

12.05 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work, if required by the Bidding Documents to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.05 Article 7 of the General Conditions and/or the Proposal section, require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Orange Water and Sewer Authority in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five (5) days after Bid opening, submit to Orange Water and Sewer Authority a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Orange Water and Sewer Authority. If Orange Water and Sewer Authority or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Orange Water and Sewer Authority may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, without an increase in the Bid price.

12.06 If apparent Successful Bidder declines to make any such substitution, Orange Water and Sewer Authority may Award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals, or entities. Declining to make requested substitutions will not constitute grounds of forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Orange Water and Sewer Authority or Engineer makes no written objection prior to giving of the Notice of Award will be deemed acceptable to Orange Water and Sewer Authority and Engineer subject to revocation of such acceptance after the Effective Date of the Agreement as provided in Article 7 of the General Conditions.

12.07 Subsequent to the submittal of the Bid, Orange Water and Sewer Authority may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, individual, or entity against which Contractor has reasonable objection.

ARTICLE 13 - PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents. All Bids must be submitted on the approved Bid Form furnished in the Bidding Documents.

A. The Lump Sum and/or Unit Price for specific items shall reflect all costs associated with furnishing, installing all items of Work as indicated on the Drawings and Technical Specifications, complete, in place and accepted, per the Engineer's Contract Documents, and any other agency having jurisdiction over the Project such as: Federal Aviation Administration (FAA), North Carolina Department of Transportation (NCDOT) Standards and Specifications, North Carolina Department of Environment and Natural Resources (NCDENR) Erosion and Sediment Control Planning and

Design Manual, NCDENR – Public Water Supply (PWS), and Orange Water and Sewer Authority.

B. All blank spaces on the Bid Form shall be completed by printing in ink or by typewriter in both words and numerals, and the Bid Form signed in ink. Erasures or alterations shall be clearly initialed also in ink by the person signing the Bid Form. In case of a conflict between the price in words and its equivalent shown in numerals, the price in words shall take precedence. **PROPOSALS SHALL NOT BE CONDITIONAL, LIMITED OR RESTRICTED IN ANY WAY.**

C. A Bid Price shall be indicated for each lump sum or unit price bid item listed therein, or the words "No Bid," "No Change," or "Not Applicable" shall be entered.

D. The omission of prices for any item on the Bid Form, or the tendering of any unbalanced Bid, as determined by Orange Water and Sewer Authority, may be the cause for the rejection of the submitted Bid.

E. The estimated quantities contained on the Bid Form are for the purpose of comparing Bids. While the quantities are close approximations, they are not guaranteed. Payment will be made on the basis of the Work as actually executed at the unit prices set forth in the executed Agreement and under the provisions of such Agreement.

F. There shall be no additional compensation to the Bidder for materials, equipment, or Work that is incidental to the successful completion of the Contract. Incidental costs include the costs inherent to the complete installation of those individual items included on the Bid Form. For example, those costs associated with temporary electrical services, surveying, staking, deliveries and storage are incidental to the Project, and no additional payment will be made unless specifically indicated in the Bidding Documents.

G. Total amount on the Bid Form shall be given as numerals (i.e. $23,000.00) and in writing (i.e. Twenty-three thousand and no/100's dollars).

13.02 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. Insert the corporate officer's capacity under each signature. The corporate address and state of incorporation shall be shown below the signatures.

13.03 A Bid by a limited liability company shall be executed in the name of the firm by a member in the presence of a witness with signature, and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown below the signature. Affix the limited liability company seal adjacent to the signatures.

13.04 A Bid by an individual or sole proprietorship shall be executed with a signature of the individual/sole proprietor in the presence of a witness with signature. Insert the words "Individual/Sole Proprietor" under the signature and show the Bidder's name and official address. Affix the individual/sole proprietor seal adjacent to the signature.

13.05 A Bid by a partnership shall be executed in the partnership name and signed by all partners (whose title must appear under the signature) in the presence of a witness with signature, accompanied by evidence of authority to sign. The official address of the

partnership shall be shown below the signatures. Affix the partnership seal adjacent to each partner signature.

13.06 A Bid by a joint venture shall be executed by each party of the joint venture under their respective seals in a manner appropriate to each such party as described above for each party type. Provide a single signature sheet for each party to the joint venture.

13.07 All names shall be typed or printed in ink below the signatures.

13.08 The Bid shall contain an acknowledgment of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.09 The Postal and email address and telephone number for communication regarding the Bid shall be shown.

13.10 The Bid shall contain evidence of the Bidder's authority and qualification to do business in the State of North Carolina or covenant to obtain such qualification prior to the award of the Contract. Bidders shall be licensed under Chapter 87 of the North Carolina General Statues as a General Contractor. Bidder's State of North Carolina contractor license number shall also be shown on the Bid Form.

13.11 Minority and Women Business Enterprise Ordinance (M/WBE) Forms shall be submitted with the Bid, or the Bid may be considered non-responsive. Orange Water and Sewer Authority has adopted a minimum ten (10%) percent goal for participation by minority businesses in the total value of the Work for this Project in accordance with Section 143-128.2 of the General Statutes of North Carolina**.**

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

14.01 Lump Sum

A. Bidders shall submit a Bid on a Lump Sum basis as set forth in the Bid Form.

14.02 Unit Price

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed on the unit price section of the Bid Form.

B. The "Bid Price" for each unit price Bid item will be the product of the "Estimated Quantity" for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and numerals will be resolved in favor of the words.

D. The Bid Price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in Article 13 of the General Conditions.

E. Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents as Liquidated Damages for failing to achieve Substantial Completion and/or Final Completion for each and every day after the time allowed, as set forth in the Agreement.

ARTICLE 15 - SUBMITTAL OF BID

15.01 Bidders shall be solely responsible for delivery of Bids in the required manner and time.

15.02 No Bid shall be accepted or considered unless the complete set of required and executed documents is included with the Bidder's submittal.

15.03 Each Bid shall include Non-Collusion Affidavits for the Bidder. Affidavits for all Subcontractors of the apparent Successful Bidder, and those Bidders requested by Orange Water and Sewer Authority, must be filed within five (5) days after the Bid opening. Blank Non-Collusion Affidavit Forms can be found in the Proposal section.

15.04 A Bid shall be received no later than the date and time prescribed and at the place indicated in the Section 00 11 16 - Advertisement for Bids, and shall be enclosed in an opaque sealed envelope plainly marked with the following information:

1. CIP No.: 376-01
2. Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)
3. Name of Bidder: _____
4. Address of Bidder: _____
   _____
   _____
5. Phone Number of Bidder: _____
6. Contact Person for Bidder: _____
7. Phone Number of Contact: _____
8. Bidder's North Carolina General Contractor's License Number: _____

For clarification reference, see Section 00 41 44A Bidders Checklist for additional information to be submitted with Bid.

15.05 Incorrect information, incomplete information, or irregularities on the Bid envelope may be cause for a Bid to be declared invalid or non-responsive. Invalid or non-responsive Bids will not be opened.

15.06 Bids received after the time listed in the Advertisement for Bids or Proposal will be returned to the Bidder unopened.

15.07 If a Bid is sent by mail, it should be registered mail. The sealed envelope containing the Bid shall be enclosed in a separate mailing/delivery envelope plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to:

Bill T. Rosa
Engineering and Planning Department
Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, North Carolina 27510

If a Bid is sent by air/ground special delivery, express delivery, etc. (e.g. FEDEX, UPS, etc.) shall be marked as indicated above and should be addressed to:

Bill T. Rosa
Engineering and Planning Department
Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, North Carolina 27510

Mark envelope with the Project title and Contract number in the lower left-hand corner. Bids sent by mail or express air/ground delivery and arriving after the time for opening of Bids shall not be considered as valid Bids. **SPECIAL NOTE: If the Bidder chooses delivery of the Bid by means other than in person, neither Orange Water and Sewer Authority nor the Engineer assumes responsibility for delivery to the Bid opening.** In such instances, the Bidder shall have no claim against Orange Water and Sewer Authority or Engineer.

15.08 Bids that are unsigned, improperly signed or sealed, conditional, illegible, obscure, contain arithmetical errors, erasures, alterations, or irregularities of any kind, may be declared unacceptable at Orange Water and Sewer Authority's sole discretion.

15.09 Bid Forms, appendices, and enclosures which are improperly prepared may be declared unacceptable at Orange Water and Sewer Authority's sole discretion.

15.10 Failure to provide security deposit, bonds, or insurance requirements will invalidate the Bid and therefore be considered non-responsive at Orange Water and Sewer Authority's sole discretion.

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 No Bidder may withdraw a Bid after Bid opening and prior to the conclusion to the period of time stated in the Bid Form except to the extent, if any, that may be required by law. Negligence on the part of the Bidder in preparing its Bid confers no right for the withdrawal of the Bid, after it has been opened.

ARTICLE 17 - OPENING OF BIDS

17.01 Bids shall be opened, unless obviously non-responsive, at the time and place indicated in the Advertisement for Bids or Proposal, unless obviously non-responsive, and read aloud publicly. An abstract of the amounts of the Bids, and major alternates, if any, will be made available to Bidders after the opening of Bids.

17.02 Bidders may be present at the opening of Bids, but it is not required.

ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Orange Water and Sewer Authority may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 - EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Orange Water and Sewer Authority reserves the right to reject any or all Bids, including without limitation, nonconforming, non-responsive, unbalanced, or conditional Bids. Orange Water and Sewer Authority further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Orange Water and Sewer Authority may also reject the Bid of any Bidder if Orange Water and Sewer Authority believes that it would not be in the best interest of the Project to make an Award to that Bidder. Orange Water and Sewer Authority also reserves the right to waive any or all informalities not involving price, time, or changes in the Work, and to negotiate terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Orange Water and Sewer Authority will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid form or prior to the Notice of Award.

19.04 In evaluating whether a Bidder is responsible, Orange Water and Sewer Authority will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Supplies, and other individuals or entities must be provided as provided in the Bidding Documents.

19.05 Orange Water and Sewer Authority may conduct such investigations as it deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.

19.06 If the Contract is to be Awarded, Orange Water and Sewer Authority will award the Contract to the Bidder whose Bid is determined by Orange Water and Sewer Authority to be in the best interest of the Project.

19.07 Notice of Award or notice of intent to Award will not constitute a Contract binding on Orange Water and Sewer Authority and will not obligate Orange Water and Sewer Authority to enter into a Contract with the Bidder. Orange Water and Sewer Authority will not be legally bound before Orange Water and Sewer Authority executes and delivers to the Bidder a written Contract.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions sets forth Orange Water and Sewer Authority requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Orange Water and Sewer Authority, it shall be accompanied by such required bonds and insurance documentation.

ARTICLE 21 - SIGNING OF AGREEMENT

21.01 After Orange Water and Sewer Authority has identified the Successful Bidder, Orange Water and Sewer Authority will issue to the Successful Bidder, a written Notice to Award.

21.02 Orange Water and Sewer Authority will give the apparent successful Bidder a Notice of Award within sixty (60) calendar days after the day of the Bid opening. When Orange Water and Sewer Authority gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts to the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within fifteen (15) calendar days thereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement and attached documents to Orange Water and Sewer Authority. Within ten (10) days after execution of the Agreement by the Orange Water and Sewer Authority Board of Directors, Orange Water and Sewer Authority will deliver one fully executed counterpart to Successful Bidder.

21.03 Failure or refusal of the Bidder whose Bid is accepted to execute the Contract as hereinbefore provided shall constitute a breach by such Bidder of the Contract created by the acceptance of the Bid, and in such event, Orange Water and Sewer Authority at its option, may determine that such Bidder has abandoned the Contract. Thereupon such Bidder's Bid and the acceptance thereof shall be null and void. It is understood by the Bidder, in the event of the annulment of the Award, that the amount of the Bid security submitted with the Bid shall be forfeited to Orange Water and Sewer Authority, not as a penalty, but as Liquidated Damages.

ARTICLE 22 - SALES AND USE TAXES

22.01 The North Carolina General Assembly adopted legislation which required that Contractors pay North Carolina Sale and Use Tax on materials, supplies, fixtures, and equipment used by the Bidder in the performance of contracts with cities, counties, and towns on Contracts dated July 1, 1961 or later. This requirement also applies to Orange Water and Sewer Authority in order that Orange Water and Sewer Authority may recover the amount of tax permitted under the law.

22.02 The following procedure in handling the North Carolina Sales Tax is applicable to this Contract. Contractor(s) shall comply fully with the requirements outlined hereinafter, in order that the Orange Water and Sewer Authority may recover the amount of tax permitted under the law.

A. It shall be the Contractor's responsibility to furnish Orange Water and Sewer Authority documentary evidence showing the materials used and sales tax paid by the Contractor and each of its Subcontractors with each payment request in a format approved by Orange Water and Sewer Authority.

B. The documentary evidence shall consist of a certified statement, by the Contractor and each of his Subcontractors individually, showing total purchases of materials from each separate vendor and total sales taxes paid each vendor. Certified statements must show the invoice number or numbers, covered and inclusive dates of such invoices.

C. Materials used from the Contractor's or Subcontractor's warehouse stock shall be shown in a certified statement at warehouse stock prices.

D. The Contractor shall not be required to certify the Subcontractor's statements.

E. The documentary evidence to be furnished to Orange Water and Sewer Authority eligible for sales or use tax refunds covers sales and/or use taxes paid on building materials used by Contractor(s) and Subcontractors in the performance of Contracts with churches, orphanages, hospitals not operated for profit and other charitable or religious institutions or organizations not operated for profit and, incorporated cities, towns, and counties in this State. The documentary evidence is to be submitted to the above-named institutions, organizations and governmental units to be included in claims for refunds to be prepared and submitted by them to obtain refunds provided by G.S. 105-164.14(2) and (3) of the 1961 Statute, and is to include the purchases of building materials, supplies, fixtures, and equipment which become a part of or annex to buildings or structures being erected, altered or repaired under Contracts with such institutions, organizations or governmental units.

22.03 The Bidder shall include North Carolina Sales and Use Tax in its Bid.

-END OF DOCUMENT-

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

DOCUMENT 00 41 44

PROPOSAL

(UNIT PRICE CONTRACT - BID FORM)

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

EXECUTIVE DIRECTOR
ORANGE WATER AND SEWER AUTHORITY
400 JONES FERRY ROAD
CARRBORO, NORTH CAROLINA 27510
(919) 968-4421

Date:_____, 2026

OWASA CIP: **#376-01**

Project: **Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)**

Name of Bidder: _____

Address of Bidder: _____

_____

_____

Phone Number of Bidder: _____

Contact Person for Bidder: _____

Phone Number of Contact: _____

Bidder's NC General Contractor's License Number (required): _____

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Orange Water and Sewer Authority in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

1.03 The undersigned Bidder hereby declares that the names of all persons interested in this Bid as principals appear in the blank spaces hereinafter provided for such purpose, that this Bid is in all respects fair and without collusion, that the Bidder has examined the locations of the proposed Work, the Advertisement to Bidders, the Instructions to Bidders, Technical Specifications, M/WBE requirements of Orange Water and Sewer Authority, the Contract Documents and Bond forms, and

the Drawings therein referred to and fully understands the same and agrees and accepts the terms and conditions thereof, that it is understood that the estimated quantities are approximate only and are given for the purpose of comparing Bids upon a uniform basis, and that said estimate shall in no way affect the unit prices for the Work.

1.04 The undersigned Bidder hereby agrees to furnish at the Bidder's cost the expense of all the necessary labor, tools, apparatus, machinery, equipment, transportation, and all other things which may be required to fully and properly perform all the terms, covenants, provisions, and agreements of this Contract.

1.05 The undersigned Bidder hereby agrees to do said Work and furnish said materials as prescribed in the Contract Documents and Technical Specifications, and, according to the Drawings and requirements of the Engineer under said Contract Documents and Technical Specifications, in a first-class manner and to the best of the undersigned's ability at the following lump sum or unit prices.

1.06 The undersigned Bidder has examined the Site of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by the Engineer for the Project, we, the undersigned Bidder, hereby offers to enter into a Contract to perform the Work for the lump sum or unit prices listed in this Bid Form in lawful money of the United States of America.

1.07 The undersigned Bidder acknowledges that it is the intent of these Contract Documents to obtain a Contract based on a ***Unit Price Bid***, unless Lump Sum Prices are applied to the various portions of the Work and are specifically requested. In the event of errors in the arithmetical extension of unit prices to total prices, the unit price bid shall govern, and the Award of the Contract shall be based on the recomputed total prices. Where discrepancy exists between words and numerals, the written words shall govern. If a Bidder submits a Bid showing a unit price for a particular item and omits an extended total for that item, or a Bidder submits a Bid showing an extended total for a particular item and omits a unit price for that item, the omitted numbers shall be computed using the equation "Estimated Quantity x Unit Bid Price = Extended Total", so that the omission shall not render the Bid non-responsive or incomplete. If the Bidder leaves blank any lines or spaces indicated for the dollar amount of any item in the Bid, that omission will be understood and treated as if the Bidder had written in zero dollars ($0.00) for that particular item in the Bid. Before applying the preceding two (2) sentences this paragraph, the following rule shall apply in the special case that it describes: In places where it is indicated that a Bid should show both words and numerals for a particular dollar amount, if the Bid shows the dollar amount in numerals but omits to show any dollar amount in words (or vice versa), the Bid shall be treated as if it had shown the indicated dollar amount in both numerals and words.

1.08 The undersigned Bidder shall be required to submit a complete detailed cost breakdown of Lump Sum Bid items for payment purposes, for approval by the Engineer, prior to the Award of the Contract.

1.09 The undersigned Bidder acknowledges that all costs for mobilization, demobilization, bonds, insurance, etc., shall be included in the Unit Price Bid indicated. There shall be no additional compensation for mobilization, demobilization, bonds, insurance, etc. and no adjustments to the Bid based on changes in the Scope of Work, including but not limited to, any additions to the Work on the Contract.

1.10 The undersigned Bidder acknowledges that the Project will be Awarded to the lowest responsible, responsive Bidder for the Project, as selected by Orange Water and Sewer Authority whose evaluation indicates that the Award will be in the best interest of the Project.

1.11 The undersigned Bidder acknowledges that all blanks on the Bid Form shall be completed by printing in ink or by typewriter and the Bid signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid Price shall be indicated for the Lump Sum or each Unit Price item listed therein, or the words, "No Bid", "No Change", or "Not Applicable" entered."

1.12 The undersigned Bidder acknowledges that the omission of prices for any item on the Bid Form, or the tendering of any unbalanced Bid may be the cause for the rejection of the submitted Bid.

1.13 The undersigned Bidder acknowledges that the payment will be made on the basis of the Work as actually executed at the Unit Prices or Lump Sum Prices set forth in the executed Contract and under the provisions of such Contract.

1.14 The undersigned Bidder acknowledges that there shall be no additional compensation to the Bidder for materials, equipment, or Work that is incidental to the successful completion of the Contract. Incidental costs include the costs inherent to the complete installation of those individual items included on the Bid Form.

1.15 The undersigned Bidder acknowledges that the Non-Collusive Affidavit for the Contractor shall be submitted with the Bid, and Non-Collusive Affidavit(s) for all Subcontractors (all tiers) for the apparent low Bidder shall be submitted within five (5) calendar days of the Bid Opening.

1.16 The undersigned Bidder acknowledges that it has included the Bid security as required by the Instruction to Bidders.

1.17 The undersigned Bidder agrees to comply with all requirements of local, State, or Federal permits that may be required for the completion of the Work.

1.18 The undersigned Bidder shall have all proper Contractors licenses and privilege licenses required under State and local laws governing their respective trade(s).

1.19 The undersigned agrees that the rights of Orange Water and Sewer Authority and the recommendations of the Engineer are not to be questioned in the Award of a Contract.

1.20 The undersigned Bidder certifies compliance with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes ("E-Verify") and represents that it will require any subcontractors to comply with the requirements of Article 2 of Chapter 64 of the General Statutes.

1.21 The undersigned Bidder certifies compliance with the requirements of Article 6 of Chapter 143 of the North Carolina General Statutes ("Iran Divestment") and that it is not listed on the State Treasurer's Final Divestment List found at the website address www.nctreasurer.com/Iran and updated every 180 days, and represents that it will require any subcontractors to comply with the requirements of Article 6 of Chapter 143 of the General Statutes.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid shall remain open and remain subject to acceptance, and is irrevocable, except as required by law, for ninety (90) calendar days from the Bid opening date, or for such longer period of time that Bidder may agree to in writing upon request of Orange Water and Sewer Authority.

2.02 If this Bid is accepted by Orange Water and Sewer Authority within the time period stated above, the Bidder will:

- Execute the Agreement within fifteen (15) calendar days of receipt of Notice of Award.
- Furnish the required Bonds within fifteen (15) calendar days of receipt of Notice of Award.
- Commence Work within ten (10) calendar days after written Notice to Proceed.

2.03 If this Bid is accepted by Orange Water and Sewer Authority within the time stated, and the Bidder fails to commence the Work or fails to provide the required bonds, the Bid security shall be forfeited as damages to Orange Water and Sewer Authority by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this Bid and the Bid upon which a Contract is signed.

2.04 In the event Bid is not accepted by Orange Water and Sewer Authority within the time stated above, the required Bid security will be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

ARTICLE 3 - BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.:	**Addendum Date:**
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.

F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.

I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.

J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 - BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;

B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

"corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;

"fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Orange Water and Sewer Authority, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Orange Water and Sewer Authority of the benefits of free and open competition;

"collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Orange Water and Sewer Authority, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

"coercive practice" means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID (UNIT PRICE BID)

5.01 CIP: **376-01**

Project: **Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)**

Project Description:

UNIT PRICE BID SHALL INCLUDE:

The Project base bid consists of furnishing all materials, labor, equipment, tools, etc. unless otherwise specified, for the rehabilitation of approximately 1.5 miles of gravity sewer pipe, ranging in size from 8-inch to 12-inch diameter, through a combination of approaches including but not limited to open cut point repairs, cured-in-place pipe lining, and pipe bursting. Work also includes lateral reinstatements, bypass pumping if needed, manhole rehabilitation identified as needed based on field conditions, traffic control if needed, restoring ground and roadway surfaces, and all associated appurtenances as described in the Specifications and as shown on the Drawings.

The Project add alternate bid consists of furnishing all materials, labor, equipment, tools, etc. unless otherwise specified for the complete and operable rehabilitation of 8-inch gravity sewer through cured-in-place pipe patches, associated lateral reinstatements, and all associated appurtenances as described in the Specifications and as shown on the Drawings.

The foregoing description shall not be construed as a complete description of all work required.

The Unit Price Bid shall reflect all costs associated with furnishing and installing, and placing into service all items of Work as indicated on the Drawings and in the Technical Specifications, complete, in place, operable and accepted by Orange Water and Sewer Authority, per the Engineer's Contract Documents.

5.02 Orange Water and Sewer Authority has established a "Contingency Allowance" for this project. The contingency allowance is intended to provide adequate budget to cover items not precisely determined by Orange Water and Sewer Authority, and unforeseeable conditions prior to the Bid. Orange Water and Sewer Authority has provided for a contingency allowance of $277,000 as indicated in the Proposal. Funds allocated as part of the allowance will be used ***at the sole discretion of Orange Water and Sewer Authority***. This allowance is included on the Bid Form in the Proposal, and will be included in the total amount of each Bid. Orange Water and Sewer Authority shall approve use of the contingency allowance funds prior to any Work associated with a contingency allowance being performed. The Contractor shall invoice items authorized for payment under the Contingency Allowance with its monthly pay applications. The amount invoiced will be deducted from the indicated amount.

5.03 Bidder shall complete the Work in accordance with the Contract Documents for the following TOTAL UNIT PRICE BID:

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CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

BID FORM

NOTE TO BIDDERS: DO NOT REMOVE THIS BID FORM FROM THE CONTRACT DOCUMENTS

UNIT PRICE BID CONTRACT

BASE BID

Item	Description	Quantity	Unit	Unit Price	Total Price
1	Mobilization (not to exceed 4.0% of base bid)	1	LS	$	$
Sewer Main Line Rehabilitation					
2	CIPP Rehabilitation, 8"	7,335	LF	$	$
3	CIPP Rehabilitation, 12"	20	LF	$	$
4	CIPP Internal Service Lateral Connection Seal	97	EA	$	$
5	Pipe Burst, 8" to 8" HDPE	515	LF	$	$
6	Service Lateral Fusion Saddle	6	EA	$	$
7	Point Repair, 8" (0'-6' depth)	6	EA	$	$
8	Point Repair, 8" (>6'-8' depth)	3	EA	$	$
9	Point Repair, 8" (>8'-10' depth)	2	EA	$	$
10	Point Repair, 8" (>10' depth)	1	EA	$	$
11	Service Lateral Wye	8	EA	$	$
12	Investigate Existing Service	10	EA	$	$
Manhole Rehabilitation					
13	Cementitious Liner	20	VF	$	$
14	Grout Injection	10	GAL	$	$
15	Rebuild Bench and Invert	5	EA	$	$
16	Replace Manhole Frame & Cover	3	EA	$	$
17	Flexible Chimney Seal	10	EA	$	$
18	Replace/Install MH Vent Stack	2	EA	$	$
19	Repair (Outside) Drop Manhole	1	EA	$	$
Miscellaneous Construction					
20	Seeding and Mulching	2,350	SY	$	$
21	Asphalt Pavement Repair	810	SY	$	$
22	Temporary Silt Fence	200	LF	$	$
23	Temporary Construction Entrance	2	EA	$	$
24	Erosion Control Excelsior Matting	75	SY	$	$
25	Erosion Control Rock Check Dam or Wattle	5	EA	$	$
26	Traffic Control	25	DAY	$	$
Total of All Unit Price Bid Items				**$**	
Contingency Allowance				**$**	**277,000**

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

Permitting Allowance	**$ 20,000**
Total Base Bid	**$**

ADD ALTERNATE 1 BID

Item	Description	Quantity	Unit	Unit Price	Total Price
Pipe Patch					
A1.1	8" Pipe Patch (up to 5' long)	38	EA	$	$
A1.2	CIPP Internal Service Lateral Connection Seal	9	EA	$	$
Total Add Alternate 1 Bid				**$**	

Total Unit Price Bid (Sum of Base Bid and Add Alternate 1 Bid)	**$**

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Bid items shall be based on actual quantities, determined as provided in the Contract Documents.

TOTAL UNIT PRICE BID for the Project described in Sub-Article 5.01**,** complete as indicated by the Contract Documents (in words and numerals):

_____ Dollars

and _____ Cents ($ _____)

Bidder_____
(Print Name)

Bidder_____
(Signature)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

CERTIFIED LIST OF EQUIPMENT/MATERIAL MANUFACTURERS AND SUBCONTRACTORS

The Bidder, _____, as part of the procedure for the submission of Bids on this Project, submits the following list of Equipment/Material Manufacturers and Subcontractors to be used in the performance of Work to be done on said Project. The list of Manufacturers and all equipment/materials furnished, and Subcontractors shall be based on requirements of the Contract Documents. Changes to this list after the Bid opening shall only be as approved by Orange Water and Sewer Authority upon request by the Contractor or as required by Orange Water and Sewer Authority based upon review of Contractor's submittals:

EQUIPMENT/MATERIALS	MANUFACTURER

WORK TASK	SUBCONTRACTOR

It is understood and agreed that, if awarded a Contract, the Contractor will not make any additions, deletions, or substitutions to this certified list without the written consent of Orange Water and Sewer Authority.

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

CERTIFICATION AFFIDAVIT

THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER UNDERSTAND AND AGREE THAT, IF AWARDED A CONTRACT, THIS CERTIFICATION SHALL BE ATTACHED THERETO AND BECOME A PART THEREOF.

NAME OF SIGNER: _____
(Please Print or Type)

TITLE OF SIGNER: _____
(Please Print or Type)

SIGNATURE: _____

DATE: _____

-END OF CERTIFICATION-

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ARTICLE 6 – TIME OF COMPLETION

6.01 Bidder agrees that the Work will be Substantially Complete within **TWO HUNDRED-TEN (210) CONSECUTIVE CALENDAR DAYS**, after the date when the Contract Time commences to run as provided in Paragraph 4.01 of the General Conditions and will be completed and ready for final payment in accordance with Paragraph 15.03 of the General Conditions within **TWO HUNDRED-FORTY (240) CONSECUTIVE CALENDAR DAYS**, of the date when the Contract Time commences to run.

6.02 Bidder accepts the provisions of the Agreement as to Liquidated Damages.

ARTICLE 7 - ATTACHMENTS TO THIS BID

7.01 See Section 00 41 44A Bidders Checklist for additional information to be submitted with and made a condition of this Bid.

ARTICLE 8 – BID CERTIFICATION

8.01 THE ABOVE INFORMATION IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF. I FURTHER UNDERSTAND AND AGREE THAT, IF AWARDED A CONTRACT, THIS CERTIFICATION SHALL BE ATTACHED THERETO AND BECOME A PART THEREOF.

SIGNATURE: _____

DATE: _____

8.02 We agree to diligently perform the Work in accordance with all Contract Documents, to complete such Work within the period as outlined in the Contract, and to begin Work within ten (10) consecutive calendar days after receipt of the Notice to Proceed from Orange Water and Sewer Authority.

ARTICLE 9 - CONTRACTOR EXPERIENCE

9.01 The undersigned Contractor has regularly engaged in and successfully completed contract Work of this Class for a minimum of 10 years. A completed contracts summary shall be submitted that clearly demonstrates a minimum of 5 years' experience. Failure to provide this information shall be just cause for rejection of the Bid:_____

_____

_____

_____

_____

_____

9.02 List of Contractor's personnel experienced to do this Work including and designating the Superintendent to be in charge of this Work showing the length of their varied experience with this particular Work. The list shall not include Subcontractor personnel.

Name	Experience	Name	Experience

9.03 List of Contractor's equipment in good condition and suitable for completion of this Contract. Contractor must be able to demonstrate ownership of all equipment necessary to complete all portions of the Contract. The list shall not include Subcontractor equipment.

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Attach additional sheets as necessary to complete the items above.

ARTICLE 10 - BID FORM SIGNATURES

10.01 Refer to Document 00 21 15 for specific Bid Form signature requirements for corporations, partnerships, limited liability companies, individuals, or sole proprietorships.

ARTICLE 11 - QUALIFICATIONS OF BIDDERS

11.01 In order to assist the Owner in determining whether the Bidder is qualified to perform the Work, as set forth in the Contract Documents, the Bidder shall furnish the following information. Bidder shall submit detailed information required for below Items 1 through 7 with their Bid package. Information required under Item 7 may be submitted in a separate envelope, marked confidential, within the Bid Package. Attach additional sheets as necessary.

1. List and describe a minimum of three (3) previous projects of similar size and nature completed in the last ten (10) years. For each project, also list:
   a. Owner, contact and telephone number;
   b. original bid price and final construction cost;
   c. specified completion time and actual completion time;
   d. explanations for differences in costs and times as required.
2. List and describe current projects, current status of job and estimated schedule of completion.
3. List references who are qualified to judge as to Bidder's financial responsibility and experience in work of similar nature to that bid upon.
4. Past Safety Performance Data; EMR and 3 years of DART (provide in Section 11.02).
5. Debarment status (provide in Section 11.02).
6. Information on claims, judgments, and final resolutions (provide in Section 11.02).
7. Financial Statement:

ASSETS

CURRENT ASSETS:

Cash	$_____
Notes and Accounts Receivable	$_____
Inventories	$_____

PLANT ASSETS:

Real Estate	$_____
Machinery	$_____
Good Will, Patents, etc.	$_____

LIABILITIES:

Notes Payable	$_____
Accounts Payable	$_____
Accrued Wages	$_____
Other Liabilities	$_____

EXCESS OF ASSETS OR NET WORTH	$_____

Note:

1. The above is a suggested form for the Financial Statement, and the Bidder is not required to follow the form explicitly. The Financial Statement submitted must clearly show to the satisfaction of the Owner the Bidder's current financial condition. The Owner reserves the privilege of requiring additional information as to financial responsibility of the Bidder prior to awarding Contract.

11.02 Provide responses for the following items:

A. **Past Safety Performance:** Provide Experience Modification Rate (EMR) and Days Away, Restricted, or Transferred (DART) Rate numbers below:

1. Current Year EMR = _____

a. Generally, an EMR greater than 1.5 will not be considered qualified. Bidders with an EMR greater than 1.5 shall provide additional supporting information if they believe that extenuating circumstances unrelated to job site safety have resulted in their high EMR. EMR must be a fully realized year, not a partial year rate.

2. Previous 3 Years DART Rates = ____, _____, _____ . Average = _____

a. Generally, a three-year average DART rate greater than 1.50 times the national rate for the North American Industry Classification System (NAICS) Code 23711 (Water and Sewer Line and Related Structures Construction) will not be considered qualified. Bidders with a three-year DART rate greater than 1.50 times the NAICS Code 23711 rate shall provide additional supporting information if they believe that extenuating circumstances unrelated to job site safety have resulted in their high DART rate. DART rates must be fully realized years, not partial year rates.

B. **Debarment Status**: Has the Bidder, or any affiliate, ever been the subject of any of the following actions:

1. Debarment. ..... Yes _____ No ___
2. Deletion from a Prequalified Bidders List ..... Yes _____ No ___
3. Other action which resembles debarment ..... Yes _____ No ___

C. **Claims/Final Resolution/Judgments** - Have any of the following actions occurred on, or in conjunction with, any project performed by the Bidder, any affiliate, or their officers, partners or directors in the last five years?

1. Legal Action Implemented by Contractor against Owner	Yes ☐	No ☐
2. Legal Action Implemented by Contractor against Subcontractor	Yes ☐	No ☐
3. Legal Action Implemented by Owner	Yes ☐	No ☐
4. Legal Action Implemented by Subcontractor	Yes ☐	No ☐
5. Settlement or Close Out Agreement in effect with Owner	Yes ☐	No ☐
6. Judgments	Yes ☐	No ☐
7. Arbitrations	Yes ☐	No ☐

Please attach additional sheets as necessary to complete the items above.

ARTICLE 12 – SEQUENCE OF WORK

12.01 The Sequence of Work may dictate extensive temporary installation until final and complete installation can be made. In this Section there is an attempt to address major steps in the order of construction but in no way should be considered as a complete and comprehensive guide through the construction phase. The Contractor is encouraged to make suggestions for modifications to this Sequence of Work to simplify or streamline the construction process. Any suggestions are to be presented to the Engineer for consideration and approval. Items of Work not specifically stated herein that are required to accomplish the project construction and keep the system in service (or on bypass) will not be considered as extra work and Change Orders for such will not be considered.

12.02 The Sequence of Work shall be as approved by the Engineer; however, this shall in no way affect the responsibility of the Contractor.

12.03 Coordinate all Work with Orange Water and Sewer Authority to minimize disruption of ongoing operations. Work may be required to be performed on weekends and/or at night to minimize disruption of normal operations.

12.04 Coordination shall be made with Orange Water and Sewer Authority prior to disconnecting/connecting to existing utilities (water or sewer mains).

12.05 Not Used.

12.06 Not Used.

ARTICLE 13 – NOT USED

CORPORATION

The Corporate Seal of

_____
(Bidder - print the full legal corporate name of firm)

_____
(President/Vice President/Authorized Corporate Officer)

(Seal)

was hereunto affixed in the presence of:

_____
(Secretary/Assistant Secretary)

(Seal)

Corporate Address:

_____

_____

_____

_____
(State of Incorporation)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

LIMITED LIABILITY COMPANY

_____
(Bidder - print the full legal name of firm)

_____
(Authorized Firm Member)

(Seal)

was hereunto affixed in the presence of:

_____
(Witness)

(Seal)

Firm Address:

_____

_____

_____

_____
(State of Formation)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

INDIVIDUAL OR SOLE PROPRIETORSHIP

_____
(Bidder - print the full name of individual or sole proprietorship)

(Seal)

Individual or Sole Proprietorship Address:

_____

_____

_____

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

PARTNERSHIP

_____
(Bidder - print the full legal corporate name of partnership)

_____	_____
(Partner and Title)	(Partner and Title)
(Seal)	(Seal)
_____	_____
(Partner and Title)	(Partner and Title)
(Seal)	(Seal)
_____	_____
(Partner and Title)	(Partner and Title)
(Seal)	(Seal)
_____	_____
(Partner and Title)	(Partner and Title)
(Seal)	(Seal)
_____	_____
(Partner and Title)	(Partner and Title)
(Seal)	(Seal)

(All Partners shall sign, additional signatures with titles and seals may be added below.)

was hereunto affixed in the presence of:

_____
(Witness)

(Seal)

Partnership Address:

_____

_____

JOINT VENTURE

If the Bid is a joint venture, add additional forms of execution for each member of the joint venture in the appropriate manner using the forms from above.

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

BID BOND

This is a Bid Bond that is subject to the provisions of G.S. 143-129 (b) of the North Carolina General statutes.

This Bond is executed on _____, 20____

The name of the Principal is _____
(Correct name of Contractor)

_____
(A Corporation, a Partnership, or an Individual, as the case may be)

The name of the Surety is _____

_____

Orange Water and Sewer Authority is the Owner.

The amount of the Bond is _____

_____ (Dollars) $_____

KNOW BY ALL MEN BY THESE PRESENTS, the Principal and Surety above named are hereby held and firmly bound unto the above named Owner hereinafter called the Owner in the penal sum of the amount stated above in lawful money of the United States, for the payment of which, 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 Principal has submitted to the Owner a certain Bid attached hereto and hereby made a part hereof to enter into a Contract in writing, for the construction of:

GRAVITY SEWER REHABILITATION (GSR) PROGRAM, GROUP 1 PACKAGE MINI BASIN 23

NOW, THEREFORE

(a) If said Bid shall be rejected, or in the alternate,
(b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for its faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid;
(c) Then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

BID BOND (CONTINUED)

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

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

Execution by Principal: **(If Contractor is a Partnership, all partners should execute Bond below)**

ATTEST:

_____ BY: _____
Principal Secretary Principal
(SEAL)

_____
Principal

_____
Principal

_____ _____
Witness as to Principal (Address)

_____
(Phone Number)

Execution by Surety:
ATTEST:

_____ _____
N. C. Resident Agent Surety
(SEAL)

_____
(Address)

_____ _____
Witness as to Surety (Phone Number)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

POWER OF ATTORNEY

(Attach)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

PROPOSAL SIGNATURE

Bidder operates under the legal name of _____

_____

BIDDERS COMPLETE THE APPROPRIATE SECTION*

CORPORATION* The Bidder is a corporation, has a corporate seal and the full names of its officers are:

President _____

Secretary _____

Vice President _____

Treasurer _____

The _____ (officer's title) is authorized to sign construction proposals and contracts for the company by action of its Board of Directors taken on _____, 20____ a certified copy of which is attached. (Strike out previous sentence if not applicable. This section must be completed if President or Vice President is not the signatory party.)

PARTNERSHIP* The Bidder is a partnership consisting of individual partners whose full names are:

_____

_____

INDIVIDUAL* The Bidder is an individual whose full name is:

_____

_____

Print Name of Legal Entity

By: _____

Print name and title of signatory

CORPORATIONS ONLY – Secretary or Assistant Secretary attest and affix corporate Seal:

_____
Circle one: Secretary or Assistant Secretary

_____
State of Incorporation

_____
Address and telephone number

Subscribe and sworn to me this _____ day of _____, 20___.

_____
Notary Public (Seal)

My Commission Expires: _____

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

CONTRACTOR'S AFFIDAVIT OF ORGANIZATION AND AUTHORITY

STATE OF _____

COUNTY OF _____

_____ being the first duly sworn on oath deposes and says that the Bidder on the attached Bid proposal is organized as indicated below and that all statements herein made are made on behalf of such Bidder and that this deponent is authorized to make them.

(Fill Out Applicable Paragraph)

1. CORPORATION:

The Bidder is a corporation organized and existing under the laws of the State of _____ and its President is _____;

its Secretary is _____,

and it does have a corporate seal. The _____ (officer's title) is authorized to sign construction Contracts and Bids for the company by action of its Board of Directors taken on _____, 20___, a certified copy of which is hereto attached. (Strike out last sentence if not applicable.)

2. PARTNERSHIP:

The Bidder is a partnership consisting of _____ and _____ _____, partners doing business under the name of _____.

3. INDIVIDUAL / SOLE TRADER:

The Bidder is an individual and if operating under a trade name, such trade name is as follows:

_____

4. ADDRESS:

The business address of the Bidder is as follows: _____

_____

Its phone number is _____.

_____
Bidder

By: _____

Subscribed and sworn to before me this _____ day of _____ , 20___

_____

My commission expires: _____
Notary Public

(SEAL)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

NON–COLLUSION AFFIDAVIT FOR CONTRACTORS

STATE OF _____

COUNTY OF _____

_____being first duly sworn, deposes and says that:

(1) He/She is the: _____
Owner, Partner, President, Vice President, or other officer with evidence of authority attached

of _____

the Bidder that has submitted the attached BID;

(2) He/She is fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;

(3) Such BID is genuine and is not a collusive or sham Bid;

(4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired; connived or agreed, directly or indirectly, with any other Bidder, firm, or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted; or to refrain from bidding in connection with such Contract; or have in any manner, directly or indirectly, sought by agreement or collusion, or communication, or conference with any Bidder, firm, or person to fix the price or prices in the attached Bid or of any other Bidder, or to fix any overhead, profit, or cost elements of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance, or unlawful agreement any advantage against (Recipient), or any person interested in the proposed Contract;

(5) The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any other of its agents, representatives, owners, employees, or parties in interest, including this affidavit.

BY: _____

ITS: _____
Title

CORPORATIONS ONLY

_____
Secretary or Assistant, attest & affix corporate seal

Subscribed and sworn to before me this _____ day of _____ , 20___

_____ My commission expires: _____

Notary Public (SEAL)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

NON-COLLUSION AFFIDAVIT FOR SUBCONTRACTOR(S)

(DUE WITHIN 5 DAYS OF THE BID OPENING)

STATE OF _____

COUNTY OF _____

_____ being first duly sworn, deposes and says that:

(1) He/She is _____ of _____, hereinafter referred to as the "Subcontractor";

(2) He/She is fully informed respecting the preparation and contents of the Subcontractor's Proposal submitted by the Subcontractor to _____, the Contractor for certain work in connection with the _____ Contract pertaining to the Project in _____ (City or County, and State);

(3) Such Subcontractor's Proposal is genuine and is not a collusive or sham proposal;

(4) Neither the Subcontractor nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Proposal in connection with such Contract or to refrain from submitting a Proposal in connection with such Contract, or has in any manner, directly or indirectly, sought by unlawful agreement or connivance with any other Bidder, firm or person to fix the price or prices in said Contractor's Proposal, or to fix any overhead, profit or cost element of the price or prices in said Contractor's Proposal, or to secure through collusion, conspiracy connivance or unlawful agreement any advantage against the _____ (Local Public Agency) or any person interested in the proposed Contract; and

(5) The price or prices quoted in the Subcontractor's Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance, or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

(Signed) _____

_____
Title

Subscribed and sworn to before me this _____ day of _____ , 20___

_____ My commission expires: _____

Notary Public

(Seal)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

During the performance of this Contract the Contractor agrees as follows:

a. The Contractor will not discriminate against any employee or applicant because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to race, color, religion, sex, 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 Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.

b. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

c. The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other Contract understanding, a notice; to be provided, advising the labor union or worker's representative of the Contractor's commitments under the Equal Employment Opportunity Section of this Contract, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

d. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations, or orders, this Contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Owner Contracts,

e. The Contractor will include the provisions of this section in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Owner so that such provisions will be binding upon each Subcontractor or vendor.

(Complete this section for signatures by a CORPORATION):

(CORPORATE SEAL)

_____
Corporate Name

ATTEST:

_____ BY: _____
Secretary* or Assistant Secretary* President* or Vice President*

*choose one

(Complete this section for signatures by PARTNERSHIP and INDIVIDUAL):

WITNESS:

_____ BY: _____(Seal)

(ACKNOWLEDGEMENT OF THE ABOVE SIGNATURE MUST BE NOTARIZED USING THE FORM ON THE FOLLOWING PAGE)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

ACKNOWLEDGEMENT FOR EQUAL EMPLOYMENT OPPORTUNITY CERTIFICATION

Corporate Acknowledgement

(Use this portion of the form for acknowledgement of signature by a Corporation):

STATE OF _____

COUNTY OF _____

I, the undersigned notary public, do hereby certify that _____ personally appeared before me this day and acknowledged that he/she is *Secretary* or Assistant Secretary** of _____, a corporation, and that by authority duly given and as the act of the corporation, the foregoing instrument was signed in its name by its *President* or Vice President**, sealed with its corporate seal, and attested by himself as its *Secretary* or Assistant Secretary**.

**choose one*

WITNESS my hand and notarial seal this _____day of _____, 20____

_____
My commission expires _____. Notary Public
(SEAL)

Individual or Partnership Acknowledgement

(Use this portion of the form for acknowledgement of signature by a partnership or an individual.)

NORTH CAROLINA (Enter correct State and County if different than shown.)

_____ COUNTY

I, the undersigned Notary Public, do hereby certify that, _____ personally appeared before me this day and acknowledged the due execution of the foregoing instrument.

WITNESS my hand and notarial seal this _____ day of _____ , 20___

_____
My commission expires: _____. Notary Public (SEAL)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

MINORITY BUSINESS PARTICIPATION

Provide with the Bid:

Under GS 143-128.2(c) the undersigned Bidder shall identify on its Bid Proposal the minority businesses that it will use on the Project and the total dollar value of the bid that will be performed by the minority businesses and list the good faith efforts **(Affidavit A)** made to solicit participation. A Contractor that performs all of the Work with its own workforce may submit an **Affidavit B** to that effect in lieu of **Affidavit A** required above.

After the Bid opening:

Orange Water and Sewer Authority will consider all bids, and determine the lowest responsible, responsive Bidder. Upon notification of being the apparent low Bidder, the Bidder shall then file within 72 hours of the notification of being the apparent lowest Bidder, the following:

> An **Affidavit C** that includes a description of the portion of Work to be executed by minority businesses, expressed as a percentage of the total Contract Price, which is equal to or more than the 10% goal established. This affidavit shall give rise to the presumption that the Bidder has made the required good faith effort; or **Affidavit D** of its good faith effort to meet the goal. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

These forms are included herein:

(1) Identification of Minority Business Participation
(2) Affidavit A – Listing of the Good Faith Effort
(3) Affidavit B – Intent to Perform Contract with Own Workforce
(4) Affidavit C – Portion of Work to be Performed by Minority Firms
(5) Affidavit D – Good Faith Efforts

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

Identification of Minority Business Participation

I,_____,
(Name of Bidder)
do hereby certify that on this Project, we will use the following minority business enterprises as construction subcontractors, vendors, suppliers, or providers of professional services.

Firm Name, Address and Phone #	Work type	*Minority Category

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

The total value of minority business contracting will be ($)_____

State of North Carolina AFFIDAVIT A – Listing of the Good Faith Efforts

County of _____

Affidavit of _____ (Name of Bidder)

I have made a good faith effort to comply under the following areas checked:

Bidders must earn <u>at least 50 points</u> from the good faith efforts listed for their bid to be considered <u>responsive</u> (NC Administrative Code 01 NCAC 30I .0102)

- ❑ **1 – (10 pts)** Contacting minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor or available on State or local government-maintained lists at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed.
- ❑ **2 – (10 pts)** Making the construction plans, specifications, and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bid or proposals are due.
- ❑ **3 – (15 pts)** Breaking down or combining elements of work into economically feasible units to facilitate minority participation.
- ❑ **4 – (10 pts)** Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ❑ **5 – (10 pts)** Attending any prebid meetings scheduled by the public owner.
- ❑ **6 – (20 pts)** Providing assistance in getting required bonding or insurance or providing alternatives to bonding or insurance for subcontractors.
- ❑ **7 – (15 pts)** Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ❑ **8 – (25 pts)** Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ❑ **9 – (20 pts)** Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ❑ **10 – (20 pts)** Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the OWNER. Substitution of contractors must be in accordance with GS 143-128.2(d). Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the BIDDER to the commitment herein set forth.

Date:_____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of North Carolina, County of _____

Subscribed and sworn to before me this ___ day of _____ 20_____

Notary Public_____My commission expires _____

AFFIDAVIT B – Intent to Perform Contract with Own Workforce

County of _____

Affidavit of _____
(Name of Bidder)

I hereby certify that it is our intent to perform 100% of the work required for the _____

_____
(Name of Project)

In making this certification, the Bidder states that the Bidder does not customarily subcontract elements of this type of project, and normally performs and has the capability to perform and will perform all elements of the work on this project with his/her own current work forces; and

The Bidder agrees to provide any additional information or documentation requested by the Owner in support of the above statement.

The undersigned hereby certifies that he or she has read this certification and is authorized to bind the Bidder to the commitments herein contained.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of North Carolina, County of _____

Subscribed and sworn to before me this ___ day of _____ 20_____

Notary Public _____

My commission expires _____

AFFIDAVIT C – Portion of the Work to be Performed by Minority Firms

County of _____

********** (NOTE: THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL) ***********

If the portion of the Work to be executed by minority businesses as defined in G. S. 143-128.2(g) is **equal to or greater than 10%** of the Bidders Total Contract Price, then the Bidder must complete this affidavit. This affidavit shall be provided by the apparent lowest responsible, responsive Bidder within **72 hours** after notification of being low Bidder.

Affidavit of _____ I do hereby certify that on the
(Name of Bidder)

_____
(Project Name)

Project ID#_____Amount of Bid $_____
I will expend a minimum of _____% of the total dollar amount of the contract with minority business enterprises. Minority businesses will be employed as construction subcontractors, vendors, suppliers or providers of professional services. Such work will be subcontracted to the following firms listed below.

Attach additional sheets if required

Name and Phone Number	*Minority Category	Work description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

Pursuant to G. S. 143-128.2(d), the undersigned will enter into a formal agreement with Minority Firms for work listed in this schedule conditional upon execution of a contract with the Owner. Failure to fulfill this commitment may constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the Bidder to the commitment herein set forth.

Date:_____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of North Carolina, County of _____

Subscribed and sworn to before me this ___ day of _____ 20_____

Notary Public_____

My commission expires _____

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

AFFIDAVIT D – Good Faith Efforts

County of _____

********* (NOTE: THIS FORM IS NOT TO BE SUBMITTED WITH THE BID PROPOSAL) ***********

If the goal of 10% participation by minority business **is not** achieved, the Bidder shall provide the following documentation to the Owner of his good faith efforts:

Affidavit of: _____
(Name of Bidder)

I do certify the attached documentation as true and accurate representation of my good faith efforts.
(Attach additional sheets if required)

Name and Phone Number	*Minority Category	Work description	Dollar Value

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American, Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

Documentation of the Bidder's good faith efforts to meet the goals set forth in these provisions.
Examples of documentation include, but are not limited to, the following evidence:

A. Copies of solicitations for quotes to at least three (3) minority business firms from the source list provided by the State for each subcontract to be let under this contract (if 3 or more firms are shown on the source list). Each solicitation shall contain a specific description of the work to be subcontracted, location where bid documents can be reviewed, representative of the Prime Bidder to contact, and location, date and time when quotes must be received.
B. Copies of quotes or responses received from each firm responding to the solicitation.
C. A telephone log of follow-up calls to each firm sent a solicitation.
D. For subcontracts where a minority business firm is not considered the lowest responsible sub-bidder, copies of quotes received from all firms submitting quotes for that particular subcontract.
E. Documentation of any contacts or correspondence to minority business, community, or contractor organizations in an attempt to meet the goal.
F. Copy of pre-bid roster.
G. Letter documenting efforts to provide assistance in obtaining required bonding or insurance for minority business.
H. Letter detailing reasons for rejection of minority business due to lack of qualification.
I. Letter documenting proposed assistance offered to minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letter of credit, including waiving credit that is ordinarily required.

AFFIDAVIT D – Good Faith Efforts (continued)

Failure to provide the documentation as listed in these provisions may result in rejection of the bid and award to the next lowest responsible and responsive bidder.

Date:_____ Name of Authorized Officer: _____

Signature: _____

Title: _____

SEAL

State of North Carolina, County of _____

Subscribed and sworn to before me this ___ day of _____ 20____

Notary Public_____

My commission expires _____

-END OF DOCUMENT-

This page intentionally left blank.

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

DOCUMENT 00 52 15

AGREEMENT

THIS AGREEMENT is dated as of the day of , in the year 2026 by and between Orange Water and Sewer Authority, Carrboro, North Carolina, party of the first part, and party of the second part, (Contractor).

Orange Water and Sewer Authority and Contractor, in consideration of the mutual covenants set forth herein, hereby agree as follows:

ARTICLE 1 - WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

The Project base bid consists of furnishing all materials, labor, equipment, tools, etc. unless otherwise specified, for the rehabilitation of approximately 1.5 miles of gravity sewer pipe, ranging in size from 8-inch to 12-inch diameter, through a combination of approaches including but not limited to open cut point repairs, cured-in-place pipe lining, and pipe bursting. Work also includes lateral reinstatements, bypass pumping if needed, manhole rehabilitation identified as needed based on field conditions, traffic control if needed, restoring ground and roadway surfaces, and all associated appurtenances as described in the Specifications and as shown on the Drawings.

The Project add alternate bid consists of furnishing all materials, labor, equipment, tools, etc. unless otherwise specified for the complete and operable rehabilitation of 8-inch gravity sewer through cured-in-place pipe patches, associated lateral reinstatements, and all associated appurtenances as described in the Specifications and as shown on the Drawings.

The foregoing description shall not be construed as a complete description of all work required.

ARTICLE 2 - THE PROJECT

2.01 The Project, of which the Work under the Contract Documents may be the whole or only a part, is generally described as follows:

OWASA CIP: #376-01, Project: **“Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)”.**

ARTICLE 3 - ENGINEER

3.01 The Project has been designed by HDR Engineering, Inc. of the Carolinas, who is to act as Orange Water and Sewer Authority’s representative to assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract

Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 - CONTRACT TIME

4.01 Time of the Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 Contract Times: (Consecutive Calendar Days)

A. Days to achieve Substantial Completion, Final Completion, and Final Payment:

The Work shall be Substantially Complete in accordance with Paragraph 15.03 of the General Conditions within **TWO HUNDRED-TEN (210) CONSECUTIVE CALENDAR DAYS,** after the date when the Contract Time commences to run (Notice to Proceed), and Finally Complete and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within **TWO HUNDRED-FORTY (240) CONSECUTIVE CALENDAR DAYS** after the date when the Contract Times commence to run (Notice to Proceed).

B. Bidder accepts the provisions of the Agreement as to Liquidated Damage.

4.03 Liquidated Damages

A. The Contractor and Orange Water and Sewer Authority recognize that time is of the essence for this Agreement and that the Orange Water and Sewer Authority will suffer financial and other losses if the Work is not completed within either or both the time of Substantial Completion and the time of Final Completion as specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expenses, and difficulties to both parties involved in proving or contesting in a legal or mediation preceding the actual loss suffered by Orange Water and Sewer Authority, if the Work is not completed on time. Accordingly, instead of requiring any such proof of losses, it is agreed that the Contractor shall be liable for and pay the following amounts to Orange Water and Sewer Authority as Liquidated Damages, and not as a penalty:

Completion Milestone Date	Liquidated Damages (per day)
Date of Substantial Completion	$700
Date of Final Completion	$700

B. Liquidated damages will be assessed for the above listed amounts for each and every day the Work remains incomplete beyond the date of Substantial Completion and the date of Final Completion, either date being independent of the other.

4.04 Weather Related Delays

A. Contractor's requests to extend Contract Time based on weather related delays shall be made in writing and shall be made with reference to the table below as the reasonably expected weather conditions for a given month. Contractor will still need to demonstrate the adverse effect on the construction schedule. Unless Orange Water and Sewer Authority agrees otherwise, the weather conditions must be shown by use of data, submitted by the Contractor, from either the National Weather Service (NWS) for Carrboro, North Carolina or NWS readings from a location closer to the site than Carrboro, North Carolina, and not by use of weather readings on the Site or by the Contractor. Notwithstanding the General Conditions, in order to request an extension of Contract Time for abnormal weather conditions the form must be submitted by the tenth (10^{th}) day of the month after the month as to which the request is made.

Month	Expected number of days with 0.1 or more inches precipitation
January	10
February	10
March	10
April	9
May	10
June	9
July	11
August	10
September	8
October	7
November	8
December	9

4.05 Work Related to Weekends or Orange Water and Sewer Authority Holiday

A. The Contractor shall have notified the Resident Project Representative by 3:30 PM, three (3) days in advance of the day of the Contractor's request to Work on a specific Saturday, Sunday, or holiday. Notwithstanding the General Conditions, if the day on which the notice is to be given is a Saturday, Sunday, or Orange Water and Sewer Authority holiday, the request shall be made by the first day before that Saturday, Sunday, or holiday that is not a Saturday, Sunday, or Orange Water and Sewer Authority holiday.

ARTICLE 5 - CONTRACT PRICE

5.01 Orange Water and Sewer Authority shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:

A. For all Work other than Unit Price Work, a Lump Sum of: _____ _____(words), ($_____ (numerals)).

B. All specific cash allowances are included in the above price in accordance with Paragraph 13.02 of the General Conditions.

C. For all Work, at the price(s) stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 - PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 Progress Payments; Retainage

A. Orange Water and Sewer Authority shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the twenty-fifth (25th) day of each month during performance of the Work as provided in Paragraphs 6.02.A.1 below provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided in the General Requirements:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts Orange Water and Sewer Authority may withhold, including but not limited to liquidated damages, in accordance with the Contract.

2. Orange Water and Sewer Authority will retain five (5%) percent of the amount of each estimate until Work covered by the Contract is fifty percent (50%) complete (50% of the Total Contract Amount). If after the Project is deemed fifty percent (50%) complete based upon the Contractor's gross Project invoices, excluding the value of materials stored on and off-site, and the Contractor provides Orange Water and Sewer Authority the following:

   a. Written verification evidencing fifty percent (50%) completion of the Project; and,

   b. Written consent of the surety named in the Project performance and payment bonds agreeing that Orange Water and Sewer Authority shall not retain more than two and one-half percent (2½%) of the Total Bid Price in retainage from periodic payments due to the Contractor;

   c. Orange Water and Sewer Authority shall reduce retainage to two and one-half percent (2½%) of the Total Bid Price from future periodic payments if Orange Water and Sewer Authority finds that the Contractor is performing

satisfactorily, and any nonconforming Work identified in writing by the Engineer or Orange Water and Sewer Authority (prior to the point of fifty percent (50%) Project completion) has been corrected by the Contractor and accepted by the Engineer or Orange Water and Sewer Authority, whoever provided such prior notice of nonconforming Work. If, however, Orange Water and Sewer Authority determines the Contractor's performance is unsatisfactory, Orange Water and Sewer Authority may reinstate the specified retainage for each subsequent periodic payment.

d. In addition to the retainage amounts allowed to be held by Orange Water and Sewer Authority, it shall also retain all rights allowed under this Agreement to withhold payment to the Contractor in accordance with the General Conditions and for unsatisfactory job progress, defective or nonconforming construction not remedied, disputed Work, or third-party claims filed against Orange Water and Sewer Authority or reasonable evidence that a third-party claim will be filed.

e. Within sixty (60) days of receipt by Orange Water and Sewer Authority of (1) an Application for Payment and (2) written consent of the surety, and after Orange Water and Sewer Authority has either (1) received a certificate of Substantial Completion or (2) received beneficial occupancy or use of the Project (if applicable), Orange Water and Sewer Authority shall pay an amount sufficient to increase total payment to Contractor to the Contract Price, less such amounts as Engineer shall determine in accordance with the General Conditions, including up to two hundred fifty percent (250%) of Engineer's estimate of the value of Work to be completed or corrected as shown on the tentative list of items to be completed or corrected attached to the certificate of Substantial Completion.

6.03 Final Payment

A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Orange Water and Sewer Authority shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

B. Prior to issuing final payment, the Contractor will furnish to Orange Water and Sewer Authority certification that: All Subcontractors and vendors associated with this Contract have been paid; no liens and/or lawsuits have been placed against the Contractor for this Work; and the total dollar amount has been paid to all Subcontractors, Suppliers, and others associated with this project.

ARTICLE 7 – INTEREST [NOT IN CONTRACT]

ARTICLE 8 - CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Orange Water and Sewer Authority to enter into this Agreement Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.

B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the General Conditions; and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the General Conditions, especially with respect to Technical Data in such reports and drawings.

E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.

G. Contractor is aware of the general nature of work to be performed by Orange Water and Sewer Authority and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

ARTICLE 9 - CONTRACT DOCUMENTS

9.01 Contents

A. The Contract Documents consist of all of the items listed in the Table of Contents, and the drawings prepared by HDR Engineering, Inc. of the Carolinas titled “Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)”. See Article 5 of the General Conditions.

B. The documents listed in Paragraph 9.01 are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in Paragraph 9.01.

D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

E. Coordination of General Conditions, Agreement, and Technical Specifications.

1. All components of the Contract Documents are essential elements of the Contract between the Owner and Contractor, and notwithstanding the requirements of Article 3.03 of the General Conditions, in case of a conflict or contradiction among the General Conditions, Agreement, and Technical Specifications, the following shall be the order of controlling authority as among these documents: The Technical Specifications shall control over the Agreement and the Agreement shall control over the General Conditions.

ARTICLE 10 - MISCELLANEOUS

10.01 Terms

A. Terms used in this Agreement will have the meanings stated in the General Conditions.

10.02 Assignment of Contract

A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is 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.

10.03 Successors and Assigns

A. Orange Water and Sewer Authority and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners,

successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 Severability

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Orange Water and Sewer Authority and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.05 Notices and Communications

A. All notices and other communications required or permitted by Contract shall be in writing and shall be given by personal delivery, email, or certified United States mail (return receipt requested) addressed/email as follows:

To Orange Water and Sewer Authority:
Attention: Bill T Rosa
Project Manager
Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, North Carolina 27510

To the Contractor:
Attention: _____
Firm Name: _____
Street Address: _____
City, State Zip Code: _____
Phone Number: _____
Email: _____

B. A change of address, email, or person to receive notices or communications may be made by either party by notice given to the other party. Any notices or communications under Contract shall be deemed given at the time of actual delivery, if it is personally delivered or faxed. If the notices or communications are sent by United States mail, it shall be deemed given upon the third calendar day following the day on which the notices or communications were postmarked, or upon actual delivery, whichever first occurs.

10.06 Technical Data and Other Work

A. Subsurface and Physical Conditions: No reports of explorations or tests of subsurface conditions at or contiguous to the Site are known to Orange Water and Sewer Authority or Engineer, that are not included with these documents as an Appendix.

B. Hazardous Environmental Conditions: No reports or drawings related to Hazardous Environmental Conditions are known to Orange Water and Sewer Authority or Engineer.

C. Other Work: Orange Water and Sewer Authority and Engineer are unaware of any other work on the Site at the time of Notice to Proceed.

10.07 Contractor's Liability Insurance

A. Workers' compensation insurance shall cover employers' liability, $1,000,000.

B. Automobile liability insurance shall have a combined single limit not less than $1,000,000 per occurrence; aggregate limit not less than $2,000,000 per year.

C. The policies of insurance required by the General Conditions shall have a combined single limit not less than $1,000,000 per occurrence; aggregate limit not less than $2,000,000 per year.

D. An Excess Liability Policy naming the contractor or other person who will be performing the activity as insured and also naming Orange Water and Sewer Authority and the Engineer as an additional insured in an amount not less than **$4,000,000** for bodily injury, personal injury, property damage and products completed operations. (Coverage shall be at least as broad as provided for in the most current version of the Insurance Services Office Form applicable to such policy.)

E. Professional liability insurance coverage self-insured retentions/deductibles in excess of $10,000 must be approved by Orange Water and Sewer Authority's Finance Director.

F. Contractor's pollution liability insurance shall have a combined single limit not less than $1,000,000 per occurrence; aggregate limit not less than $1,000,000 per year.

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

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

CERTIFICATE OF INSURANCE
(Attach)

See Article 6 of the General Conditions and Article 10.07 herein above for specific requirements.

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

POWER OF ATTORNEY
(Attach)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

ARTICLE 11 - CERTIFICATE OF ATTORNEY

I hereby certify that I am the duly appointed attorney for Orange Water and Sewer Authority and that I have examined the foregoing instrument and Bond, and insurance documents and I have approved the same as being legal and in proper form.

This _____ day of _____, 20___.

_____
AUTHORITY GENERAL COUNSEL

ARTICLE 12 - CERTIFICATE OF PAYMENTS

I hereby certify that I am the legal and duly appointed Financial Officer for Orange Water and Sewer Authority and that provision for the payment of the moneys to fall due under this agreement has been made by appropriation duly made or by Bonds or notes duly authorized, as required by the Local Government and Fiscal Control Act.

This _____ day of _____, 20___.

BY: _____
DIRECTOR OF FINANCE

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

ARTICLE 13 - CONTRACTOR'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

FOR CORPORATIONS:

THIS IS TO CERTIFY that on this day _____ appeared before me, with whom I am personally acquainted, who, being duly sworn, says that he or she* is the _____ (title of signatory party) and that _____ (name of attesting party) is the Assistant* Secretary of _____, the Corporation described in and which executed the foregoing Contract; that he or she* knows the common seal of said corporation; that the seal affixed to the said instrument is said common seal; that the name of the corporation was subscribed thereto by the said Vice* President and that the said Vice* President and Assistant* Secretary-subscribed their names thereto and said common seal was affixed, all by order of the Board of Directors of said Corporation, and said instrument is the act and Deed of said Corporation.

FOR PARTNERSHIPS AND INDIVIDUALS:

THIS IS TO CERTIFY that on this day _____ appeared before me, with whom I am personally acquainted, who, being duly sworn, says that he or she* is the Owner or Partner* of _____, the entity described in and which executed the foregoing Contract; and that if a Partner, he or she* attests that the consent of all partners was attained before executing said Contract.

Witness my hand and notarial seal, this the ___ day of _____, 20__

_____
Notary Public

My commission expires: _____

* Strike as needed

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

ARTICLE 14 - OWNER'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

THIS IS TO CERTIFY that on this day (Todd Taylor* or Mary Darr*) _____personally appeared, and acknowledged before me that (he or she*) is the _____, of Orange Water and Sewer Authority, and that, by authority of the Board of its Directors, (he or she*) executed the foregoing document on its behalf, as its act and deed.

Witness my hand and notarial seal, this the ___ day of _____, 20__

* Strike as needed

_____
Notary Public

My commission expires: _____

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

ARTICLE 15 - CONTRACT SIGNATURES

IN WITNESS WHEREOF, said Individual, Partnership or Corporation (circle one) has caused these presents to be signed in its corporate name, its corporate seal to be hereto affixed and attested by its secretary, and the Owner has caused these presents to be executed in its name by the Executive Director, attested by its Secretary and its Official Corporate Seal to be affixed all by order of its Board of Directors as of the day and year first above written.

Individuals or Partnerships Sign Below

Printed Legal Name of Individual or Partners: Signature(s):

_____ _____ (SEAL)

_____ _____ (SEAL)

_____ _____ (SEAL)

ATTEST:

_____ _____

Secretary Partnership Name (if applicable)

Corporations Sign Below

Name of Corporation: _____

ATTEST Signature: _____

_____ Title: _____

Corporate Secretary or Assistant Secretary

(SEAL) Officer's Printed Name: _____

OWASA Sign Below

ORANGE WATER AND SEWER AUTHORITY

By:_____
Todd Taylor, Executive Director

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

IMPORTANT: If the Contractor is a Corporation, the legal name of the Corporation shall be set forth above, together with the signature of the officer or officers authorized to sign Contracts on behalf of the Corporation; if Contractor is a partnership, the true name of the firm shall be set forth above, together with the signatures of all the partners; and if Contractor is an individual, his signature shall be placed above. If signature is by an agent other than an officer of a Corporation or a member of a partnership, a Power of Attorney must be attached hereto. Signature of Owner and Contractor shall also be acknowledged before a Notary Public or other person authorized by law to execute such acknowledgment on the Owner's and Contractor's Affidavits which are found under Article 13 and Article 14 herein above this page.

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

PERFORMANCE BOND AND PAYMENT BOND

Date of Contract: _____

Contract Name and Number: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23), #376-01

Name of Principal (Name of Contractor): _____

_____

Name of Surety: _____

_____

Name and Address of Surety's NC Resident Agent: _____

_____

Contracting Body: Orange Water and Sewer Authority

Amount of Performance Bond (in words and numerals): _____
_____ dollars ($_____)

Amount of Payment Bond: Same dollar amount as the dollar amount of Performance Bond.

Date of Execution of these Bonds: _____

* *

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

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain Contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the Principal shall well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term of said Contract and any extensions thereof that may be granted by the Contracting Body, with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all the undertakings, covenants, terms, conditions, and agreements of any and all duly authorized modifications of said Contract that may

hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue. As used hereinabove, "modifications" shall include, without limitation, changes (including, without limitation, changes granting extensions of time) and additions to with respect to the Work, scope of work, and specifications.

* *

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

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal entered into a certain Contract with the Contracting Body, numbered as shown above and hereto attached:

NOW THEREFORE, if the Principal shall promptly make payment to all persons supplying labor and material in the prosecution of the Work provided for in said Contract, and any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation to be void; otherwise to remain in full force and virtue. As used hereinabove, "modifications" shall include, without limitation, changes (including, without limitation, changes granting extensions of time) and additions to or with respect to the Work, scope of work, and specifications.

* *

The Performance Bond and the Payment Bond are being combined here only for purposes of convenience in signing and acknowledging and the obligations of the Principal and of the Surety are the same as if the bonds were on separate documents. Each bond is in the dollar amount stated above, and the amounts of these bonds are not combined. The Surety agrees that both of these bonds are fully binding on it whether or not the Principal executes these bonds. These bonds are given pursuant to Article 3 of Chapter 44A of the NC General Statutes.

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

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

ATTEST:

_____	_____
Principal Secretary (SEAL)	Principal
	By: _____(1)
	By: _____(1)
	By: _____(1)
	_____ (Address)
_____	_____
Witness as to Principal	(Phone Number)
_____	
	_____ (Surety)

ATTEST:

_____	By: _____
N. C. Resident Agent (SEAL)	Attorney-in-Fact
_____	_____
Witness as to Surety	(Address)
_____	_____
(Address)	(Phone Number)

(1) If Contractor is a Partnership, all partners should execute Bond.

(Note: If you use a raised corporate seal, press hard enough to make it legible.)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

PERFORMANCE AND PAYMENT BOND - POWER OF ATTORNEY

(Attach)

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

ACKNOWLEDGEMENT OF CONTRACTOR'S EXECUTION OF CONTRACT, PERFORMANCE BOND AND PAYMENT BOND

State of _____ County of _____

I, _____, a Notary Public for the aforesaid county and state, certify that _____ personally appeared before me this day, and acknowledged that he or she is _____ Secretary of _____, a corporation, and that by authority duly given and as the act of the corporation, the foregoing (1) Contract with Orange Water and Sewer Authority and (2) Performance Bond and Payment Bond with respect to the Contract, were signed in its name by its _____President, whose name is _____ _____, sealed with its corporate seal, and attested by him/herself as its said Secretary or Assistant Secretary.

This the ____ day of _____.

_____
NOTARY PUBLIC

My commission expires:

ACKNOWLEDGEMENT OF SURETY'S EXECUTION OF PERFORMANCE BOND AND PAYMENT BOND

State of _____ County of _____

I, _____, a Notary Public for said county and state, certify that _____, personally appeared before me this day and acknowledged that he or she is Attorney in Fact for _____, the Surety named in the foregoing Performance Bond and Payment Bond, in both of which bonds the contracting body is Orange Water and Sewer Authority, and that he or she executed said bonds, under the seal of said Surety, on behalf of said Surety.

This the ____ day of _____.

_____
NOTARY PUBLIC

My commission expires: _____

CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

NON-DISCRIMINATION CLAUSE

It is specifically agreed as part of the consideration of the signing of this Contract that the parties hereto, their agents, officials, employees or servants will not discriminate in any manner on the basis of age, handicap, race, color, creed, sexual orientation or national origin with reference to the subject matter of this Contract, no matter how remote.

This provision being incorporated for the benefit of the Orange Water and Sewer Authority and its residents may be enforced as set out in said ordinances; enforcement of this provision shall be by action for specific performance, injunctive relief, or other remedy as by law provided.

This provision shall be binding on the successors and assigns of the parties hereto with reference to the subject matter of this Contract.

SIGNATURE FOR CORPORATION

_____
Corporate Name

ATTEST:

_____ BY: _____
Secretary* / Assistant Secretary* President* / Vice President*

_____ _____
(Printed Name) (Printed Name)

(Corporate Seal)

INDIVIDUAL OR PARTNERSHIP SIGNATURE

BY: _____(SEAL)
(Printed Name)

WITNESS:

_____

_____
(Printed Name)

*choose one

-END OF DOCUMENT-

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DOCUMENT 00 52 16

FORM OF SUBMITTALS

The forms listed below and included in this Section are to be used in accordance with the requirements noted in other Sections and included herein. The first five digits of the form number generally refers to the Section number which would provide the most information or instruction regarding that form. Forms such as the Bid Form are included in the Section to which it pertains.

Any form referred to in the Contract Documents but not contained in the Project Manual should be requested from Orange Water and Sewer Authority and the failure to include a required form herein does not excuse the Contractor from the requirement to use that form.

Form #	Title
00300-A	Notice of Award
00500-A	Notice to Proceed
00700-A	Certificate of Substantial Completion
00700-B	MBE Documentation for Contract Payments
00700-F	Application and Certification for Progress Payment
00700-G	Work Change Directive
00700-H	Field Order
00700-I	Change Order
00700-C	AIA Document G706 Contractor's Affidavit of Payments of Debts & Claims
00700-D	AIA Document G706A Contractor's Affidavit or Release of Liens
00700-E	AIA Document G707 Consent of Surety Company to Final Payment
	NC Sales & Use Tax Affidavit

NOTICE OF AWARD

CIP # 376-01

To: _____
_____
_____
_____

From: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)

Contract Amount: $ _____

You are hereby notified that Orange Water and Sewer Authority has accepted your Bid dated _____ for the above named project in response to its Advertisement for Bids.

You are required by the Instructions to Bidders to execute the formal Contract with Orange Water and Sewer Authority and to furnish Performance and Payment Bonds and evidence of insurance (per Article 6 of the General Conditions and Agreement Section 10.07) within 10 calendar days from the date of delivery of this Notice.

If you fail to execute said Contract and to furnish said bonds and insurance within 10 calendar days from the date of delivery of this Notice, Orange Water and Sewer Authority shall be entitled to consider all of your rights arising out of its acceptance of your Bid as abandoned and to award the Work covered by the Advertisement to Bids to another, to re-advertise the Work, or otherwise dispose thereof as Orange Water and Sewer Authority sees fit.

Dated this **XXTH** day of _____

By: _____ **By:** _____

Date: _____ **Date:** _____

Title: Finance Officer **Title:** Director of Engineering

This Instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act

Orange Water and Sewer Authority

ACCEPTANCE OF NOTICE BY CONTRACTOR

Receipt of this Notice of Award is hereby acknowledged.

By: _____ Date: _____

Title: _____

NOTICE TO PROCEED

PO # _____
CIP # 376-01

To: _____
_____
_____
_____

From: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)

Contract Amount: _____

You are hereby notified that the Contract Time(s) for the above Project will commence to run on _____. You are directed to commence work on the referenced Project by that date. You are to complete the Work on or before the completion dates noted below.

The Contract Time(s) based on the durations set forth in Article 4 of the Agreement are:

Substantial Completion of Milestone Number 1: _____
Substantial Completion of Milestone Number 2: _____
Substantial Completion of All Work: _____
Final Completion of All Work: _____

Article 4 of the Agreement provides for the assessment of Liquidated Damages for each consecutive calendar day the Work remains incomplete after the above completion dates.

By: _____
Title: Director of Engineering
Date: _____

Contractor:

By: _____
Title: _____
Date: _____

CERTIFICATE OF SUBSTANTIAL COMPLETION

CIP # 376-01

To: _____
_____
_____
_____

From: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer and the Work is hereby declared to be substantially complete in accordance with the Contract Documents on [INSERT DATE].

A tentative list of items to be completed or corrected will be issued as the punch list. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of Contractor to complete all the Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities and warranties shall be as follows:

Owner _____

Contractor _____

This certificate does not constitute an acceptance of Work that is not in accordance with the Contract Documents nor is it release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

RECOMMENDATION OF ENGINEER

By: _____ Title: _____

Firm: _____ Date: _____

ACCEPTANCE BY CONTRACTOR

By: _____ Title: _____

Firm: _____ Date: _____

APPROVAL BY OWNER

By: _____ Title: _____

Firm: Orange Water and Sewer Authority Date; _____

MBE DOCUMENTATION FOR CONTRACT PAYMENTS

Prime Contractor: _____

Address & Phone: _____

Project Name: _____

Pay Application #: _____ Period: _____

The following is a list of payments made to Minority Business Enterprises on this project for the above-mentioned period.

MBE FIRM NAME	* INDICATE TYPE OF MBE	AMOUNT PAID THIS MONTH	TOTAL PAYMENTS TO DATE	TOTAL AMOUNT COMMITTED

*Minority categories: Black, African American (B), Hispanic (H), Asian American (A), American Indian (I), Female (F), Social and Economically Disadvantage (D)

Date: _____ Approved/Certified By: _____
Name

_____
Title

_____
Signature

SUBMIT WITH EACH PAY REQUEST & FINAL PAYMENT

APPLICATION AND CERTIFICATION FOR PROGRESS PAYMENT

PO # _____

To: Orange Water & Sewer Authority (Owner) **Application #: _____**
Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)
Period Covered: From: _____ To: _____

Application for Payment:

This Application for Progress Payment is submitted in accordance with the General Conditions of the Contract Documents. Application is hereby made for the progress payment in the amount indicated below:

	PROGRESS PAYMENT CALCULATION	
A.	Original Contract Price (Schedule of Values)	$0.00
B.	Net Total Value of Executed Change Orders to Date	0.00
C.	**CONTRACT VALUE TO DATE (A+B)**	0.00
D.	Value of Completed Change Order Work to Date	0.00
E.	Value of Completed Original Contract Work and Stored Materials to Date	0.00
F.	**TOTAL VALUE OF COMPLETED WORK AND STORED MATERIALS TO DATE (D+E)**	0.00
G.	**REMAINING CONTRACT BALANCE (C-F)**	0.00
	CURRENT PERIOD & RETAINAGE	
H.	**VALUE OF WORK COMPLETED THIS PERIOD (not cumulative)**	0.00
I.	Retainage Held This Period (5% of Line H)	0.00
J.	Cumulative Retainage Held to Date (including this period)	0.00
K.	Retainage Released This Period (partial or final)	0.00
L.	**REMAINING RETAINAGE BALANCE (J – K)**	0.00
	OTHER ADJUSTMENTS	
M.	Other Withholding (if any)	0.00
N.	Total Value of Previous Progress Payments (excluding current retainage release)	0.00
	FINAL CALCULATION	
O.	**TOTAL DEDUCTIONS (L + M + N)**	0.00
P.	**AMOUNT DUE THIS APPLICATION (F – O)**	0.00
Q.	**ACTUAL PAYMENT APPROVED BY OWASA (IF DIFFERENT FROM P)**	0.00

Final Retainage Payment Declaration

☐ This is the final payment request. All remaining retainage of $_____ is being released to the Contractor.

CONTRACTOR CERTIFICATION:

The undersigned Contractor certifies that (1) all previous payments received from Owner on account of Work done under the Contract referred to above have been applied to discharge, in full, obligations of Contractor incurred in connection with Work covered by prior Applications for Payment numbered 1 through _ inclusive and (2) title to all materials and equipment incorporated in said Work or otherwise listed in, or covered by, this Application for Progress Payment will pass to Owner at time of payment free and clear of all liens, claims, security interests and encumbrances (except such as covered by Bond acceptable to Owner).

Firm: _____ **By:** _____

Title: _____ **Date:** _____

ENGINEER CERTIFICATION:

Payment of the above AMOUNT DUE THIS APPLICATION is hereby recommended.

Firm: _____ **By:** _____

Title: _____ **Date:** _____

OWASA APPROVAL:

Payment of the above AMOUNT DUE THIS APPLICATION is hereby approved.

OWASA Account #: 6000 **By:** _____

PO #: _____ **Date:** _____

PROGRESS PAYMENT FORM – SECTION-BY-SECTION INSTRUCTIONS

These instructions are organized into the same sections as the progress payment form, so both OWASA Finance and contractors can easily follow along when completing or reviewing the form. Each line is explained within its section.

PROGRESS PAYMENT CALCULATION

- A: Original Contract Price – *The base contract value before any change orders.*
- B: Net Total Value of Executed Change Orders – *The total dollar value of all approved change orders (additions minus deductions)*.
- C: **CONTRACT VALUE TO DATE (A + B)** – *The updated total contract amount including change orders.*
- D: Value of Completed Change Order Work to Date – *Cumulative value of all change order work completed so far.*
- E: Value of Completed Original Contract Work and Stored Materials – *Cumulative value of all original contract work and any stored materials.*
- F: **TOTAL VALUE OF COMPLETED WORK & STORED MATERIALS (D + E)** – *The contractor's total earned amount (past and current work).*
- G: **REMAINING CONTRACT BALANCE (C – F)** – *Amount of the contract still uncompleted.*

CURRENT PERIOD & RETAINAGE

- H: **VALUE OF WORK COMPLETED THIS PERIOD (NOT CUMULATIVE)** – *Only the value of work done during this pay period.*
- I: Retainage Held This Period (5% of H) – *The amount withheld (5%) from this period's work.*
- J: Cumulative Retainage Held to Date – *Total retainage OWASA is holding, including this period, before any release.*
- K: Retainage Released This Period – *The amount of retainage being paid back to the contractor this period (partial or final release).*
- L: Remaining Retainage Balance (J – K) – *Retainage OWASA is still holding after any release this period.*

OTHER ADJUSTMENTS

- M: Other Withholding (If Any) – *Any amounts OWASA must withhold for penalties or adjustments (usually $0).*
- N: Total Value of Previous Progress Payments (Excluding Current Retainage Release) – *The total OWASA has already paid on all prior pay apps, excluding retainage released this period.*

FINAL CALCULATION

- O: Total Deductions (L + M + N) – *All amounts not being paid now, including retainage, withholdings, and prior payments.*
- P: Amount Due This Application (F – O) – *The net amount due to the contractor for this pay app.*
- Q: Actual Payment Approved by OWASA – *The final approved payment, if adjusted from P by OWASA.*

FINAL RETAINAGE PAYMENT DECLARATION

- *Note: Use this checkbox when the final retainage is being released, confirming that the project is closing and no retainage remains (L = $0).*

WORK CHANGE DIRECTIVE

PO # _____

WCD # _____

Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23) **Date:** _____

Owner: Orange Water and Sewer Authority **Engineer:** HDR Engineering, Inc._____

Contractor:_____

Title: _____

You are directed to proceed promptly with the following change(s):

If a claim is made that the above change(s) have affected Contract Price or Contract Time, any claim for a Change Order based thereon will involve one of the following methods of determining the effect of the change(s).

Method of determining change in Contract Price:

_____ Time and materials

_____ Unit Prices

_____ Cost plus fixed fee

_____ Other:_____

Method of determining change in Contract Time:

_____ Contractor's records

_____ Inspector's records

_____ Other:_____

Estimated change in Contract Price:

$_____. This estimated change in Contract Price is not to be exceeded without further authorization.

Estimated change in Contract Time:

_____ days. This estimated change in Contract Time is not to be exceeded without further authorization.

RECOMMENDATION OF WORK CHANGE DIRECTIVE

By: _____ By: _____

Firm: _____ Firm: _____

Date: _____ Date: _____

OWASA APPROVAL OF WORK CHANGE DIRECTIVE

By: _____ Date: _____

FIELD ORDER

PO # _____

FO # _____

Project: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23) **Date:** _____

Owner: Orange Water and Sewer Authority **Engineer:** HDR Engineering, Inc.

Contractor: _____

This Field Order is issued to interpret/clarify the Contractor Documents, order minor changes in the Work, and/or to documents trade-off agreements. Owner and Contractor hereby agree that the work described in this Field Order is to be accomplished without changes in Contract Price, Contract Time, claim or other costs. Contractor is to execute this Field Order and return it to Owner for execution within 48 hours.

Title:

Description:

Attachments:

CHANGE ORDER

CO # _____ **PO #** _____

To: _____
_____
_____
_____

From: Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, NC 27510

PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)

You are hereby notified that OWASA is issuing **Change Order #** ____ for the above referenced contract under the provisions of Article 10 of the General Conditions. This change is subject to all the terms, conditions and provisions of the original contract.

Item #	Description Of Changes (Increases)	Amount
a.	Insert descriptions here	$0,000.00
b.	Insert descriptions here	$0,000.00
c.	Insert descriptions here	$0,000.00
	Subtotal of these changes	**$000,000.00**
	Contract Amount before modified	**$000,000.00**
	Contract Amount as modified	**$000,000.00**

Description of Change: Description of each increase and associated cost breakdowns are attached, along with all related project communications.

Contract performance period changes: _____ (Unchanged / Increased / Decreased)

RECOMMENDATION OF CHANGE ORDER (BY CONSULTANT)

The change described above is hereby recommended:

By: _____ Title: _____

Firm: _____ Date: _____

ACCEPTANCE OF CHANGE ORDER (BY CONTRACTOR)

The change described above is accepted and hereby acknowledged:

By: _____ Title: _____

Firm: _____ Date: _____

APPROVAL OF CHANGE ORDER (BY OWNER)

By: _____	By: _____	By: _____
Date: _____	Date: _____	Date: _____
Title: Finance Officer	Title: Executive Director	Title: Director of Engineering
This Instrument has been pre-audited in the manner required by the Local Government Budget and Fiscal Control Act	Orange Water and Sewer Authority	Orange Water and Sewer Authority

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CIP NO.: 376-01
PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package
DATE: April 29, 2026

DOCUMENT 00 91 13

ADDENDA

ADDENDUM NUMBER [_____]

DATE: _____

PROJECT: Gravity Sewer Rehabilitation (GSR) Program, Group 1 Package (Mini Basin 23)

OWASA CIP NUMBER: 376-01

OWNER: ORANGE WATER AND SEWER AUTHORITY

ENGINEER: _____

TO: _____

This Addendum forms a part of the Contract Documents and modifies the Bidding Documents dated _____, Addendum Number _____ issued _____, with amendments and additions noted herein below.

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

This Addendum consists of _____ pages:

CHANGES TO THE SPECIFICATIONS:

1. _____.

CHANGES TO THE DRAWINGS:

1. DRAWING ____- _____

-END OF DOCUMENT-

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SECTION 01 22 00
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Defines how work items are measured and paid for on Unit Price Contracts. These items include unit price, lump sum price, and allowance payment items.
2. In the case of conflict between this Section and the measurement methods specified in the individual Technical Specification Sections, the measurement methods in Technical Specification Sections shall govern.
3. Receive payment for work after it is installed. Payment for material on hand can only be paid for if allowed by the Agreement, the General and/or Special Conditions.
4. Partial payment may be requested for items partially installed when agreed to by the Owner.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00.
2. Division 01.

1.2 UNIT PRICE ITEMS

A. Quantity and measurement estimates stated in the Bid Form are estimates for bidding purposes only. Actual payments shall be based on actual quantities installed, in-place, as measured and/or verified by the Engineer.

B. Unless otherwise stated in the Contract Documents, the bid unit prices shall be in effect throughout the contract duration. When the variance between the estimated quantities and the actual installed quantities is more than 25 PCT, the Contractor or the Owner may negotiate a change to the Unit Price. That change will be made in accordance with the Change Order process as defined in the Contract Documents.

C. Except as defined above, make no claim, nor receive any compensation, for anticipated profits, loss of profit, damages, or any extra payment due to any difference between the amounts of work actually completed, or materials or equipment furnished, and the estimated quantities.

D. The Owner can only pay for quantities that exceed the estimated quantities so long as the total payments to the Contractor do not exceed the Contract Price. If the added quantities will result in payments that exceed the Contract Price, a Change Order will need to be executed before payment can be made for the added quantities.

E. Assist Engineer by providing necessary equipment, workers, and survey personnel as required to measure quantities.

F. Unless stated in the Contract Documents, measured quantities shall be rounded to the nearest whole integer.

G. Measurement:

1. Measurement for progress payment shall be made by, or approved by, the Engineer based on the actual quantities installed. The actual quantities installed can be adjusted for corrections to previous calculations, incomplete elements or components if agreed to in advance and in writing by the Engineer.
2. Unless otherwise provided for in the Contract Documents, unit price items are all inclusive of all related work, direct and indirect costs, to provide a complete and functional item.

3. The final measurement shall be based on actual installed quantities, jointly measured and agreed to by the Contractor and the Engineer. Quantities can be adjusted (increased or decreased) based on a final calculation of quantities by the Engineer and Contractor.

H. Payment:

1. Progress payments shall be in accordance with the Contract Documents based on estimated quantities installed paid at the bid unit price.
2. The final payment shall be based on actual quantities, fully installed, tested and placed into service, paid at the bid unit price.

1.3 LUMP SUM ITEMS

A. Progress payments for Lump Sum items in the Bid Schedule will be based on the breakdown prepared by the Contractor and approved by the Engineer and Owner before acceptance of the Application for Payment for the Lump Sum item.

B. Lump Sum payment will be for the entire item as specified and as indicated in the Contract Documents. Payment for all bid items indicated as Lump Sums shall include the cost of all labor, materials, equipment and incidentals necessary to furnish, install, clean, test, and place each bid item into operation; including permitting, general conditions, overhead and profit.

1.4 ALLOWANCES

A. Allowances indicated in the Bid Schedule are defined in the Contract Documents. No work may be performed under an allowance item without prior written approval of the Owner.

B. Allowance is for exclusive use of Owner for changes as a result of changed conditions, design refinements, and unanticipated design issues. Not for use by Contractor as Contractor's construction contingency.

C. Owner approval of adjustment required prior to authorization of progress payments from Contingency Allowance. Adjustments will include either:

1. Contractor's lump sum or unit price measured quantity amount.
2. Contractor's related costs, and reasonable overhead and profit as stipulated in Contract Documents when Work is performed on the Cost of the Work basis.

D. Any unused balance of the allowances shall revert to the Owner upon completion of the project. Prior to final payment, the original amount provided for allowances shall be adjusted to actual costs by deductive Change Order, adjusting the contract price, accordingly.

E. Make no claim, nor receive any compensation, for anticipated profits, loss of profit, damages, or any extra payment due to any unexpended portion of the allowances.

F. The Contractor is to include time for allowance work in the construction schedule. No adjustment of Contract Time shall be allowed for any work performed under allowance items.

G. The measurable and allowable costs for work performed under an allowance item(s) shall be limited to the actual costs associated with that allowance item unless otherwise stated in the specific measurement and payment provisions under allowance items.

H. Allowance work shall be paid for on a time and materials basis.

1. Time and materials sheets shall be signed daily by the Engineer or its representative to confirm labor hours worked, equipment hours worked, and materials incorporated into the Work.
2. Labor hours worked shall be recorded daily for each person. The labor will be classified by craft. Actual labor rates will be supported by certified payroll or other payroll documentation agreed to by the Engineer.
3. Equipment hours worked shall be recorded daily for each piece of equipment used to perform the work. Equipment rates shall be as defined in the General or Supplemental Conditions.
4. Material shall be identified with the costs supported by invoice.

5. Profit and overhead shall be compensated for in accordance with the Contractor's Fee as defined in the General Conditions.
6. Labor and equipment rates used in pricing out the work shall be as defined in the General Conditions.

1.5 MEASUREMENT AND PAYMENT

A. Basis of Bid Items

1. Mobilization
    a. Measurement for payment shall be the lump sum unit price and include the pay items listed below.
    b. The lump sum unit price shall include, but not be limited to, costs for providing: bonds; insurance; permits (not specifically included elsewhere); establishing field offices/lay down areas; construction and progress/monthly/on-site meetings (including incidentals); moving construction equipment to the site; necessary clearing and grubbing within easements as needed for access to existing sewer infrastructure to perform the rehabilitation work; closeout documents; as-built drawings; and other necessary but "nonscheduled" work. Mobilization shall not exceed 4% of base bid.
    c. Up to 50% of the bid price will be paid with the first pay application. The remaining will be paid evenly throughout the project to account for moving equipment between the various sites.

B. Sewer Main Line Rehabilitation Items

This work shall include furnishing, transporting, and installing all pipe and materials; joints and jointing; exploratory excavation including locating existing utilities; bracing, shoring, and sheeting; trenching, dewatering as required; backfilling including material; compacting; connecting to manholes; restoration of all ground surfaces; protection and adjusting of aboveground and underground utilities and service connections; disposal of spoil; all testing including jetting and CCTV inspections; cleanup; and all other related and necessary materials, work, and equipment required to construct a complete operable sewer line in accordance with the Contract Documents.

Surface restorations do not include asphalt repair or seeding and mulching.

There is no price adjustment for the depth of bury unless specifically noted in bid form. Payment will be based on the actual number of linear feet of pipe rehabilitated/replaced or services but shall not exceed that shown on the drawings without prior approval from the Owner.

2. CIPP Rehabilitation, 8"
    a. Measurement for payment shall be for the actual number of linear feet of CIPP installed for each designated diameter of pipe, complete in-place, measured horizontally along the centerline of the pipe.
    b. The bid unit price shall include, but not be limited to, costs for providing: furnishing, transporting, unloading and temporary storage all CIPP materials and equipment; pre-cleaning and pre-installation CCTV to document active service connections and determine if any repairs need to be done to sanitary sewer prior to CIPP installation; and dewatering and surface preparation for installing all CIPP materials at locations as shown on the drawings and details.
    c. The bid unit price shall also include all bypassing required for installing the CIPP; removal and re-installation of manhole frame and cover as needed for access; providing appurtenances for the protection of existing sewer manhole infrastructure and adjusting/relocation/re-installation of above ground and underground utilities as required for CIPP work; proper capture and removal of CIPP water/steam residue/wastewater from CIPP installation, as required by OWASA; restoration of all ground surfaces not listed as a separate bid item; coordination with power/telecom/phone companies for supporting poles during CIPP work, if needed; CCTV (post installation) visual inspections and all required testing; clean up, and all other related and necessary

materials, work, and equipment required to install CIPP, complete, as defined in the technical specifications and in accordance with the Contract Documents.

3. CIPP Rehabilitation, 12”
    a. Measurement for payment shall be for the actual number of linear feet of CIPP installed for each designated diameter of pipe, complete in-place, measured horizontally along the centerline of the pipe.
    b. The bid unit price shall include, but not be limited to, costs for providing: furnishing, transporting, unloading and temporary storage all CIPP materials and equipment; pre-cleaning and pre-installation CCTV to document active service connections and determine if any repairs need to be done to sanitary sewer prior to CIPP installation; and dewatering and surface preparation for installing all CIPP materials at locations as shown on the drawings and details.
    c. The bid unit price shall also include all bypassing required for installing the CIPP; removal and re-installation of manhole frame and cover as needed for access; providing appurtenances for the protection of existing sewer manhole infrastructure and adjusting/relocation/re-installation of above ground and underground utilities as required for CIPP work; proper capture and removal of CIPP water/steam residue/wastewater from CIPP installation, as required by OWASA; restoration of all ground surfaces not listed as a separate bid item; coordination with power/telecom/phone companies for supporting poles during CIPP work, if needed; CCTV (post installation) visual inspections and all required testing; clean up, and all other related and necessary materials, work, and equipment required to install CIPP, complete, as defined in the technical specifications and in accordance with the Contract Documents.
4. CIPP Internal Service Lateral Connection Seal
    a. Measurement for payment shall be for the actual number of **ACTIVE** sanitary sewer services cut open/reactivated from previous CIPP work on existing sanitary sewer (for Items 2. and 3.), regardless of sanitary sewer and/or sanitary sewer service size.
    b. The bid unit price shall include, but not be limited to, costs for providing: identifying active sewer service; perform post-CCTV inspection to verify that all services are properly re-connected, complete, at locations determined by CCTV.
    c. The bid unit price shall also include removal and re-installation of manhole frame and cover as needed for access; all required testing and all other related and necessary materials, to connect the sanitary sewer services to CIPP sanitary sewers listed in Items 2. and 3., including service connection pre-cuts (relief cuts), complete, as defined in the technical specifications and in accordance with the Contract Documents.
    d. No payment shall be made for cutting open sanitary sewer services that are abandoned or not active.
5. Pipe Burst, 8” to 8” HDPE
    a. Measurement for payment shall be for the actual number of linear feet of pipe bursting and HDPE installed for gravity sanitary sewer, for each designated diameter of pipe, complete in-place measured horizontally along the centerline of the pipe.
    b. The bid unit price shall include, but not be limited to, costs for providing: furnishing, transporting, unloading, and temporary storage all HDPE and other pipe bursting materials and equipment; perform pre-bursting CCTV to determine if any repairs need to be done/addressed prior to pipe bursting installation; document locations and number of service connections; perform all HDPE invert (in and out) water tight connections to existing manholes, complete, at locations as shown on the drawings and details.
    c. The bid unit price shall also include all bypassing (if required); removal and re-installation of manhole frame and cover as needed for access; providing appurtenances for the protection of existing sewer manhole infrastructure and adjusting/relocation/re-installation of above ground and underground utilities as required for pipe bursting work; restoration of all ground surfaces not listed as a separate bid item; coordination with power/telecom/phone companies for supporting poles during pipe bursting work, if needed; CCTV (post installation) visual inspections and all required testing; clean up, and all other related and necessary materials, work, and equipment required for pipe

bursting, complete, as defined in the technical specifications and in accordance with the Contract Documents.

6. Service Lateral Fusion Saddle
    a. Measurement for payment shall be for the actual number of **ACTIVE** service lateral fusion saddles installed and reconnected to existing service, complete (for Item 5.), regardless of sanitary sewer and/or sanitary sewer service size.
    b. The bid unit price shall include, but not be limited to, costs for providing: identifying active sewer services (dye testing, smoke testing, etc.), perform post-CCTV inspection to verify that all services are properly re-connected, complete, at locations determined by CCTV.
    c. The bid unit price shall also include bypass piping, trench excavations, restoration of all ground surfaces not listed as a separate bid item, required testing and all other related and necessary materials, to connect the existing sanitary sewer services to new gravity sanitary sewer HDPE pipe listed in Items 5., complete, as defined in the technical specifications and in accordance with the Contract Documents.
    d. No payment shall be made for cutting open sanitary sewer services that are abandoned or not active.
7. Point Repair, 8” (0’-6’ depth)
    a. Measurement for payment shall be for the actual number of point repairs made up to length as designated on the drawings **and** per the designated sanitary sewer diameter size and within the depth range noted on the bid form, complete.
    b. The bid unit price shall include, but not be limited to, costs for providing: perform pre-CCTV to determine exact location of repair and post-CCTV inspection to verify that the repair was done satisfactorily to OWASA's standards, complete.
    c. The bid unit price shall also include bypass pumping and associated appurtenances, trench excavations, removal and re-installation of manhole frame and cover as needed for access; pipe cutting/sawing of existing pipe, removal and disposal of materials, providing the appropriate pipe repair (including undercutting bedding material (up to 2'), furnishing new bedding material and compacting, furnishing new pipe material, gaskets, stainless steel sleeves, couplings, grouting, miscellaneous concrete, excavatable flowable fill, concrete curb and gutter removal and replacement, and/or any other repair appurtenances, restoration of all ground surfaces not listed as a separate bid item, required testing and all other related and necessary materials to make and complete the repair as defined in the technical specifications and in accordance with the Contract Documents.
8. Point Repair, 8” (>6’-8’ depth)
    a. Measurement for payment shall be for the actual number of point repairs made up to length as designated on the drawings **and** per the designated sanitary sewer diameter size and within the depth range noted on the bid form, complete.
    b. The bid unit price shall include, but not be limited to, costs for providing: perform pre-CCTV to determine exact location of repair and post-CCTV inspection to verify that the repair was done satisfactorily to OWASA's standards, complete.
    c. The bid unit price shall also include bypass pumping and associated appurtenances, trench excavations, removal and re-installation of manhole frame and cover as needed for access; pipe cutting/sawing of existing pipe, removal and disposal of materials, providing the appropriate pipe repair (including undercutting bedding material (up to 2'), furnishing new bedding material and compacting, furnishing new pipe material, gaskets, stainless steel sleeves, couplings, grouting, miscellaneous concrete, excavatable flowable fill, concrete curb and gutter removal and replacement, and/or any other repair appurtenances, restoration of all ground surfaces not listed as a separate bid item, required testing and all other related and necessary materials to make and complete the repair as defined in the technical specifications and in accordance with the Contract Documents.
9. Point Repair, 8” (>8’-10’ depth)

a. Measurement for payment shall be for the actual number of point repairs made up to length as designated on the drawings **and** per the designated sanitary sewer diameter size and within the depth range noted on the bid form, complete.
b. The bid unit price shall include, but not be limited to, costs for providing: perform pre-CCTV to determine exact location of repair and post-CCTV inspection to verify that the repair was done satisfactorily to OWASA's standards, complete.
c. The bid unit price shall also include bypass pumping and associated appurtenances, trench excavations, removal and re-installation of manhole frame and cover as needed for access; pipe cutting/sawing of existing pipe, removal and disposal of materials, providing the appropriate pipe repair (including undercutting bedding material (up to 2'), furnishing new bedding material and compacting, furnishing new pipe material, gaskets, stainless steel sleeves, couplings, grouting, miscellaneous concrete, excavatable flowable fill, concrete curb and gutter removal and replacement, and/or any other repair appurtenances, restoration of all ground surfaces not listed as a separate bid item, required testing and all other related and necessary materials to make and complete the repair as defined in the technical specifications and in accordance with the Contract Documents.

10. Point Repair, 8” (>10’ depth)
    a. Measurement for payment shall be for the actual number of point repairs made up to length as designated on the drawings **and** per the designated sanitary sewer diameter size and within the depth range noted on the bid form, complete.
    b. The bid unit price shall include, but not be limited to, costs for providing: perform pre-CCTV to determine exact location of repair and post-CCTV inspection to verify that the repair was done satisfactorily to OWASA's standards, complete.
    c. The bid unit price shall also include bypass pumping and associated appurtenances, trench excavations, removal and re-installation of manhole frame and cover as needed for access; pipe cutting/sawing of existing pipe, removal and disposal of materials, providing the appropriate pipe repair (including undercutting bedding material (up to 2'), furnishing new bedding material and compacting, furnishing new pipe material, gaskets, stainless steel sleeves, couplings, grouting, miscellaneous concrete, excavatable flowable fill, concrete curb and gutter removal and replacement, and/or any other repair appurtenances, restoration of all ground surfaces not listed as a separate bid item, required testing and all other related and necessary materials to make and complete the repair as defined in the technical specifications and in accordance with the Contract Documents.
11. Service Lateral Wye
    a. Measurement for payment shall be for the actual number of **ACTIVE** service lateral wyes installed and reconnected to existing active service, complete, regardless of sanitary sewer service size and sanitary sewer main size.
    b. The bid unit price shall include, but not be limited to, costs for providing: pre-CCTV to determine exact location of service, perform post-CCTV inspection to verify that the service lateral wye was properly re-connected to sanitary sewer, complete.
    c. The bid unit price shall also include furnishing bypass pumping and associated appurtenances, trench excavations, removal and re-installation of manhole frame and cover as needed for access; installing service lateral wye on sanitary sewer main per the manufacturer's recommendation and per OWASA' standards, connection to existing sewer service lateral wye per IPC's and OWASA's standards (whichever is more stringent), restoration of all ground surfaces not listed as a separate bid item, concrete curb and gutter removal and replacement, and other miscellaneous work and material required to connect the service lateral wye to the sanitary sewer main and existing sewer service lateral, complete, as defined in the technical specifications and in accordance with the Contract Documents.
    d. No payment shall be made for providing/connecting lateral service wye to non-active/abandoned sewer services.
12. Investigate Existing Service

a. Measurement for payment shall be for the actual number of existing sewer services evaluated/investigated to determine if a sewer service is active, complete, regardless of size of sewer service. Owner and Engineer shall approve (in writing) which service(s) to be evaluated/investigated.

b. The bid unit price shall include, but not be limited to, costs for providing: removal and re-installation of manhole frame and cover as needed for access; providing pre-CCTV to determine exact location of potential service to evaluate; provide dye testing, smoke testing, "snake" service cameras and/or any other non-destructive investigation means to obtain visual proof of service being active, complete, as defined in the technical specifications and in accordance with the Contract Documents.

c. The bid unit price shall also include the Contractor contacting and coordinating with parcel owners/tenants to perform the evaluations. Contractor shall coordinate with Owner PRIOR to coordinating with parcel owner/tenant to discuss:

   1) How the parcel owner/tenant should be contacted

   2) Service investigation/evaluation strategy.

d. Ample time shall be given to parcel owner/tenant, at least seven (7) days after the parcel owner/tenant has given their approval, before the Contractor can enter the dwelling. Contractor shall not be allowed in a dwelling without being accompanied by the Owner and/or Engineer.

C. Manhole Rehabilitation Items

Prior to any manhole rehabilitation (rehab), manholes must be photographed (interior) adequately (minimum 4 photos showing type of defect to manhole that will be rehabilitated/repaired) and document what type of rehab will be done. Engineer shall review manhole with Contractor, Engineer (with coordination with Owner on as needed basis) to confirm rehabilitation is needed (Items 13. through 19 on the Bid Form) and what type of rehab is to be performed. Manholes shall be identified on the construction drawings and type of rehab shall be labeled on the construction drawing (for as-built information purposes). In no circumstance shall work performed exceed the quantity listed on the Bid Form unless prior written (NOT verbal) permission/approval has been obtained from the Owner.

Contractor shall provide all training and obtain all certifications/licenses/permits for their personnel (and any of their associates and subcontractors) to enter confined spaces per OSHA regulations (and per local, state and federal laws/ordinances) and shall provide all equipment, harnesses, material, ventilation, and any other appurtenances required to enter manholes and/or other structures deemed and defined confined space areas.

13. Cementitious Liner

a. Measurement for payment shall be for the actual vertical feet (VF) of manhole wall to be rehabilitated with cementitious liner, complete, regardless of manhole diameter. Engineer shall approve (in writing) which manholes are to be rehabilitated with cementitious liner, prior to any manhole rehabilitation activity.

b. The bid unit price shall include, but not be limited to, costs for providing: furnishing, transporting, and installing all materials for manhole rehabilitation work, complete. Other work to be provided/included: cleaning manhole; performing jointing repair prior to installing lining; removing and reinstalling frame and cover for access (and noting any damage and severe corrosion that may be present on the frame and cover to Engineer), providing new concrete riser rings and remove any existing concrete/masonry rings that are damaged an/or deteriorating; provide exploratory excavation around manhole as required (including locating underground utilities prior to excavation and proper notifications to parcel owners/tenants prior to rehabilitation work); provide sheeting and shoring as needed; provide dewatering; all required surface preparation; grouting voids to industry standards; apply sealant around joints of manholes (interior and exterior, if required); bypass pumping and associated appurtenances; replacing and installing rubber boots on manhole prior to liner rehabilitation; compacted fill material (outside of manhole) due to exploratory

investigations and/or manhole joint repair; site restoration, complete, as per industry standards and as defined in the technical specifications and in accordance with the Contract Documents.

c. Surface restorations do not include asphalt repair and seeding and mulching. Bid unit cost for those items are included as separate bid items on the Bid Form.

14. Grout Injection

a. Measurement for payment shall be for the actual gallons (GAL) of grout injected to fill voids on the exterior of manhole walls through manually cored/drilled holes, as required, complete, regardless of manhole diameter and depth. Contractor shall obtain prior approval (in writing) from Engineer to perform grout injection on any manhole.

b. The bid unit price shall include, but not be limited to, costs for providing : furnishing, transporting, and installing all materials for grout injection work, complete. Other work to be provided/included: coring/drilling manhole for grout injection points; performing after injection grouting interior manholes work; removing and reinstalling frame and cover (and noting any damage and severe corrosion that may be present on the frame and cover to Engineer) as required for work; provide any exploratory excavation around manhole as needed (including locating underground utilities prior to excavation and proper notifications to parcel owners/tenants prior to rehabilitation work); provide sheeting and shoring as needed; provide dewatering; all required surface preparation; provide injection grouting to industry standards; bypass pumping and associated appurtenances if required; provide fill material (outside of manhole) due to exploratory excavations/investigations; site restoration; removal and replacement of concrete curb and gutter. Grout injection shall be provided per industry standards and as defined in the technical specifications and in accordance with the Contract Documents.

c. Surface restorations do not include asphalt repair and seeding and mulching. Bid unit cost for those items are included as separate bid items on the Bid Form.

15. Rebuild Bend and Invert

a. Measurement for payment shall be for the number of bench and/or inverts actually repaired/rebuilt, as required, complete, regardless of manhole diameter and depth. Contractor shall obtain prior approval (in writing) from Engineer to perform bench and/or invert repair on any manhole.

b. The bid unit price shall include, but not be limited to, costs for providing: furnishing, transporting, and installing all materials for bench repair and invert repair work, complete. Other work to be provided/included: provide bypass pumping and associated appurtenances; removing existing bench and inverts as required; cleaning manhole and bench/invert areas; performing new bench and invert work; removing and reinstalling frame and cover (and noting any damage and severe corrosion that may be present on the frame and cover to Engineer), provide dewatering; all required surface preparation; grouting voids to industry standards; apply sealant around joints of manholes (interior and exterior, if required); bypass pumping and associated appurtenances; replacing and installing rubber boots on manhole prior to liner rehabilitation; compacted fill material (outside of manhole) due to exploratory investigations and/or manhole joint repair; removal and replacement of concrete curb and gutter; site restoration, complete, as per industry standards and as defined in the technical specifications and in accordance with the Contract Documents.

c. Surface restorations do not include asphalt repair and seeding and mulching. Bid unit cost for those items are included as separate bid items on the Bid Form.

16. Replace Manhole Frame & Cover

a. Measurement for payment shall be for the number of manhole frame and covers actually removed and replaced with new, complete, regardless of manhole diameter and depth. Contractor shall obtain prior approval (in writing) from Engineer to replace existing manhole frame and covers with new on any manhole.

b. The bid unit price shall include, but not be limited to, costs for providing: removing existing manhole frame and cover completely; removing any other manhole material that is required to be removed for proper placement of new frame and cover. Other

work to be provided/included: providing all required surface preparation; repairing concrete base for new frame and cover; providing "con seal", sealant, and adhesive required for placement of frame and cover; compacted fill material (outside of manhole) due frame and cover work; removal and replacement of concrete curb and gutter; and site restoration, complete. Manhole frame and cover shall be furnished (per OWASA's material standards and installed per industry standards and as defined in the technical specifications and in accordance with the Contract Documents.

c. Surface restorations do not include asphalt repair and seeding and mulching. Bid unit cost for those items are included as separate bid items on the Bid Form.

17. Flexible Chimney Seal
    a. Measurement for payment shall be for the number of flexible chimney seals actually installed, complete, regardless of manhole diameter and depth. Contractor shall obtain prior approval (in writing) from Engineer to provide flexible chimney seal inside any manhole.
    b. The bid unit price shall include, but not be limited to, costs for providing: removing existing manhole frame and cover completely; removing any other manhole material that is required to be removed for proper placement of existing frame and cover. Other work to be provided/included: providing all required surface preparation; repairing concrete base for reinstalling existing frame and cover (if in good condition, Engineer to determine); providing "con seal", sealant, and adhesive required for placement of frame and cover; compacted fill material (outside of manhole) due frame and cover work; removal and replacement of concrete curb and gutter; and site restoration, complete. Manhole frame and cover shall be furnished (per OWASA's material standards and installed per industry standards and as defined in the technical specifications and in accordance with the Contract Documents.
    c. Surface restorations do not include asphalt repair and seeding and mulching. Bid unit cost for those items are included as separate bid items on the Bid Form.
18. Replace/Install MH Vent Stack
    a. Measurement for payment shall be for the number of new MH vent stacks (associated bends, fittings, and appurtenances) actually installed, complete, regardless of MH vent stack height (up to 8'). Contractor shall obtain prior approval (in writing) from Engineer to replace any MH vent stack (and associated appurtenances) on any manhole.
    b. The bid unit price shall include, but not be limited to, costs for providing: removal and re-installation of manhole frame and cover as needed for access; removing existing vent stack and associate appurtenances; removing any other manhole material that is required to be removed for proper installation of new MH vent stack. Other work to be provided/included: providing all required surface and vent stack penetration preparation; repairing top of manhole (if required) for new vent stack; providing sealants, grouting and adhesive required for installation of vent stack; and site restoration, complete. MH vent stack shall be furnished (per OWASA's construction details and material standards) and provided as defined in the technical specifications and in accordance with the Contract Documents.
19. Repair (Outside) Drop Manhole
    a. Measurement for payment shall be for the actual number of drop manholes (outside drops) repaired regardless of size and depth of manhole and pipe diameter of exterior drop piping and associated appurtenances as designated on the drawings and as noted on the bid form, complete.
    b. The bid unit price shall include, but not be limited to, costs for providing: bypass pumping and associated materials; dewatering; removal of manhole frame and cover for access, as required; excavation around outside of manhole to expose outside drop in its entirety; sheeting and shoring; removal and disposal of contaminated soil/gravel; removal and disposal of existing drop manhole piping and associated appurtenances (bends, tees, couplings, wall sleeves, rubber boots, and bracing and all miscellaneous hardware); removal and disposal of miscellaneous concrete; suitable fill material, excavatable flowable fill, crushed stone, and gravel as required; removal and disposal

of existing grouting of manhole drop inverts inside and outside of manhole; new drop manhole piping and associated appurtenances (bends, tees, couplings, wall sleeves, rubber boots, and bracing and all miscellaneous stainless steel hardware); new grouting and rubber boots for new drop pipe inverts as required; new miscellaneous concrete and any other items needed to repair the drop manhole (outside drop), complete.

c. The bid unit price shall also include providing concrete curb and gutter removal and replacement; restoration of all ground surfaces not listed as a separate bid item, required testing and all other related and necessary materials to make and complete the repair as defined in the technical specifications, construction details, and in accordance with the Contract Documents.

D. Miscellaneous Construction Items

This work shall include furnishing, transporting, and installing all materials; exploratory excavation including locating existing utilities; restoration of all ground surfaces; protection and adjusting of aboveground and underground utilities and service connections; disposal of spoil; all testing; clean up; and all other related and necessary materials, work, and equipment required.

Quantities provided in the bid form are estimates. Required restoration, erosion and sediment control, and traffic control work shall be as agreed upon in the field with OWASA's Engineer based on observed conditions. Payment will be based on the work performed but shall not exceed estimated quantities without prior approval from the Owner.

20. Seeding and Mulching

a. Measurement for payment shall be for the actual square yards (SY) of seeding and mulching installed as listed on the bid form.

b. The bid unit price shall include, but not be limited to, costs for providing: seeding matching existing type of grass removed; top soil (minimum 4" in depth) where required due to construction activity; grading and leveling; initial watering and fertilization; clean up, and all other related and necessary materials, work, and equipment required, complete, in accordance with the Contract Documents. Contractor shall use installation methods as recommended and in accordance the OWASA, Town of Chapel Hill, and/or NCDEQ EMLR specifications, whichever is more stringent.

c. Any additional seeding and mulching required due to construction activity outside easement areas, shall be provided at Contractor's expense.

d. Type of seeding and mulching (including fertilizer) shall be furnished (as required per the local authority over the project's jurisdiction), as defined in the technical specifications and in accordance with the Contract Documents.

e. Fifty percent (50%) of unit cost shall be retained until a good standing of grass/vegetation is standing (at least 3" high) at approximately 95% coverage. Engineer to determine (in coordination with Owner) that the seeding criteria has been met prior to final release of payment to Contractor. Contractor shall be responsible for preparing (proper seeding type and mixture for area) and applying seeding/mulch at correct rate for proper coverage. In areas requiring additional and/or re-seeding/mulching mixture for proper growth, shall be done solely at Contractor's expense.

21. Asphalt Pavement Repair

a. Measurement for payment shall be for the actual square yards (SY) of asphalt pavement repair as listed on the bid form.

b. The bid unit price shall include, but not be limited to, costs for providing: proper disposal of unsuitable material and milling of existing asphalt (minimum 2") as required; furnishing sub-base, ABC base, bituminous binder, and bituminous asphalt surface course (matching existing asphalt depth but in no case less than 2" thick); disturbed roadway striping (matching location, color and type of existing striping (thermoplastic where required), removal and replacement of concrete curb and gutter (if not included under individual bid items); hauling; installation; compaction; and all testing of the sub-base, ABC Base, and surface course, as required per Town of Chapel Hill, NCDOT, or

any other entity having jurisdiction over the roadway disturbed by construction/rehabilitation activity.

c. Removal of existing asphalt for repair/trench cutback shall be included in the measurement for payment.

d. Removal of existing asphalt over trench and removal of temporary surface materials shall be included.

e. Temporary cold bituminous patch shall be included in bid unit price.

f. No additional compensation shall be made for depths of asphalt greater than 2 inches.

g. Asphalt pavement repair shall be done in accordance with technical specifications and construction details, and Contract Documents.

22. Temporary Silt Fence

a. The measurement for payment shall be for providing temporary silt fence as listed on the Bid Form. Payment shall be made for temporary silt fence actually installed.

b. The bid unit price shall include, but not be limited to, costs for providing: silt fence, steel posts, ties per NCDEQ EMLR (or entity having local jurisdiction or project area whichever is more stringent); weekly maintenance (including removing and disposing of sediment properly) of silt fence areas and after 0.10" rain events; removal, repair, and installation of new silt fence and appurtenances as required through out the life of the project; removal of temporary silt fence (upon **prior** approval from the Engineer) at end of project and restoration of area where temporary silt fence was installed.

c. No portion of any erosion control appurtenance shall be installed on private property, at any time, unless the Owner has acquired an easement for the construction activity or unless it is within public right of way.

d. Temporary silt fence material and installation shall be in accordance with technical specifications and construction details, and Contract Documents.

23. Temporary Construction Entrance

a. Measurement for payment shall be for providing each temporary construction entrance actually installed.

b. The bid unit price shall include, but not be limited to, costs for providing: geo-textile fabric, stone, gravel, grading, compaction, temporary cross drains as required, complete; weekly maintenance (including washing sediment off stone/gravel properly); repair, and installation of new stone and gravel and appurtenances as required through out the life of the project; removal of temporary construction entrance and associated appurtenances (upon prior approval from the Engineer) at end of project and restoration of area where temporary construction entrance was installed.

c. No portion of any erosion control appurtenance shall be installed on private property, at any time, unless the Owner has acquired an easement for the construction activity or unless it is within public right of way.

d. Temporary construction entrance shall be installed and constructed of materials in accordance with technical specifications and construction details, and Contract Documents.

24. Erosion Control Excelsior Matting

a. Measurement for payment shall be for the square yards (SY) of excelsior matting actually installed and as listed on the bid form.

b. The bid unit price shall include, but not be limited to, costs for providing: installing excelsior matting and associated appurtenances, maintenance throughout construction and removal (if required) per NCDEQ guidelines and/or local authority having jurisdiction over the project area; clean up, and all other related and necessary materials, work, and equipment required, complete.

c. Adjustment to the location of the excelsior matting may be made by the Engineer or Owner. Excelsior matting shall not be installed across driveways, dirt roadways/streets, sidewalks, pathways, creeks, streams, over curb and gutter, etc., unless directed by the Engineer or Owner.

d. No portion of any erosion control appurtenance shall be installed on private property, at any time, unless the Owner has acquired an easement for the construction activity or unless it is within public right of way.

e. Any additional excelsior matting installed prior to approval form the Engineer and Owner will be at Contractor's expense.

f. Contractor shall use installation methods as recommended and in accordance the OWASA, Town of Chapel Hill, and/or NCDEQ EMLR specifications, whichever is more stringent.

g. Type of excelsior matting shall be furnished as defined in the technical specifications and construction details, and in accordance with the Contract Documents.

25. Erosion Control Rock Check Dam or Wattle

a. Measurement for payment shall be for the number of check rock dams and/or wattles actually installed and as listed on the bid form.

b. The bid unit price shall include, but not be limited to, costs for providing: installing rock check dam and/or wattle and associated appurtenances, maintenance throughout construction and removal at end of construction; clean up, and all other related and necessary materials, work, and equipment required, complete, in accordance with the Contract Documents.

c. Adjustment to the location of temporary wattle installation may be made by the Engineer or Owner. Temporary rock check dams and/or wattles shall not be installed within driveways, roadways/streets, sidewalks, pathways, creeks, streams, curb and gutter, etc., unless directed by the Engineer or Owner.

d. No portion of any erosion control appurtenance shall be installed on private property, at any time, unless the Owner has acquired an easement for the construction activity or unless it is within public right of way.

e. Any additional temporary wattles installed prior to approval from the Engineer and Owner will be done at Contractor's expense.

f. Contractor shall use installation methods as recommended and in accordance the OWASA, Town of Chapel Hill, and/or NCDEQ EMLR specifications, whichever is more stringent.

g. Type of rock check dams and/or wattles shall be furnished as defined in the technical specifications and construction details, and in accordance with the Contract Documents.

26. Traffic Control

a. Measurement for payment shall be for the actual number of days traffic control is provided (not less than 24 hours per day **or** as defined in the technical specifications and/or construction drawings).

b. The bid unit price shall include, but not be limited to, costs for providing: all devices and labor, and installing and maintaining all devices and measures (24 hours a day) along the construction corridor (All devices and measures shall conform to MUTCD and NCSMUTCD specifications/criteria); continual required adjustments and maintenance to devices and measures for MOT and removal of the traffic control devices and measures at the end of the project, complete.

c. No portion of any traffic control device appurtenance shall be installed on private property, at any time.

d. Contractor shall use traffic control devices as recommended and in accordance with the Town of Chapel Hill and/or NCDOT, whichever is more stringent.

e. Traffic control shall be performed as defined in the technical specifications and construction details, and in accordance with the Contract Documents.

E. Add Alternate 1 Bid Items

This work shall include furnishing, transporting, and installing all pipe and materials; joints and jointing; exploratory excavation including locating existing utilities; bracing, shoring, and

sheeting; trenching, dewatering as required; backfilling including material; compacting; connecting to manholes; restoration of all ground surfaces; protection and adjusting of aboveground and underground utilities and service connections; disposal of spoil; all testing including jetting and CCTV inspections; cleanup; and all other related and necessary materials, work, and equipment required to construct a complete operable sewer line in accordance with the Contract Documents.

Surface restorations include asphalt repair or seeding and mulching.

There is no price adjustment for the depth of bury unless specifically noted in bid form. Payment will be based on the actual number of pipe patches installed but shall not exceed that shown on the drawings without prior approval from the Owner.

A1.1. 8” Pipe Patch (up to 5’ long)

a. Measurement for payment shall be for the actual number of pipe patches installed (up to 5' long) per the designated sanitary sewer diameter regardless of depth.
b. The bid unit price shall include, but not be limited to, costs for providing: transporting, unloading and temporary storage all CIPP materials and equipment, pre-cleaning and CCTV (pre-installation) to determine if any repairs need to be done to sanitary sewer prior to CIPP installation, dewatering and surface preparation for installing all CIPP materials at locations as shown on the drawings and details.
c. Contractor to document all service connections within repair area.
d. The bid unit price shall also include all bypassing required for installing the CIPP pipe patch; providing appurtenances for the protection of existing sewer manhole infrastructure and adjusting/relocation/re-installation of above ground and underground utilities as required for CIPP work; proper capture and removal of CIPP water/steam residue/wastewater from CIPP pipe patch installation, as required by OWASA; restoration and of all ground surfaces not listed as a separate bid item; coordination with power/telecom/phone companies for supporting poles during CIPP work, if needed; CCTV (post installation) visual inspections and all required testing; clean up, and all other related and necessary materials, work, and equipment required to install CIPP pipe patch, complete, as defined in the technical specifications and in accordance with the Contract Documents.

A1.2. CIPP Internal Service Lateral Connection Seal

a. Measurement for payment shall be for the actual number of CIPP internal service lateral connection seals actually performed, regardless of sanitary sewer and/or sanitary sewer service size.
b. The bid unit price shall include, but not be limited to, costs for providing: identifying active sewer services, performing actual lateral service seal, perform post-CCTV inspection to verify that all services are properly re-connected at the locations determined by CCTV, restoration and of all ground surfaces not listed as a separate bid item and other miscellaneous work, complete.
c. The bid unit price shall also include all required testing and all other related and necessary materials, to connect the sanitary sewer services to CIPP pipe patch in Items A1.1., complete, as defined in the technical specifications and in accordance with the Contract Documents.
d. No payment shall be made for cutting open sanitary sewer services that are not active/abandoned.

1.6 APPLICATION FOR PAYMENT

A. Provide a Summary Sheets and breakdown sheets equivalent to those of EJCDC document C-620, Contractor's Application for Payment forms.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

SECTION 01 74 00
CLEANING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for keeping the Site free of accumulations of waste materials during construction (“progress cleaning”).
2. Cleaning for Substantial Completion and prior to final inspection (collectively, “closeout cleaning”).

B. Scope:

1. Contractor shall perform cleaning during the Project, including progress cleaning, as condition precedent to Substantial Completion, upon completion of the Work, and as required by the General Conditions, as may be modified by the Supplementary Conditions, this Specifications section, and elsewhere in the Contract Documents.
2. Maintain in a clean manner the Site, the Work, and areas adjacent to or affected by the Work.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. National Fire Protection Association (NFPA):
   a. 241, Safeguarding Construction, Alteration, and Demolition Operations.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. Progress Cleaning – General:

1. Clean the Site, work areas, and other areas occupied by Contractor not less than weekly. Dispose of waste materials in accordance with the General Conditions, as may be modified by the Supplementary Conditions, and the following:
   a. Comply with NFPA 241 for removing combustible waste materials and debris.
   b. Do not hold non-combustible materials at the Site more than three days if the ambient air temperature is expected to rise above 80 degrees F. When ambient air temperature is less than 80 degrees F, dispose of non-combustible materials within seven days of their generation.
   c. Provide suitable containers for storage of waste materials and debris. Avoid generation of odors and creation of nuisances.
   d. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately.

B. Progress Cleaning – Site:

1. Keep outdoor, dust-generating areas wetted down or otherwise control dust emissions.
2. Not less than weekly, brush-sweep roadways and paved areas at the Site and adjacent areas used by construction vehicles or otherwise affected by construction activities.
3. Comply with local dust control regulations.

C. Progress Cleaning – Work Areas:

1. Clean areas where the Work is in progress to maintain an extent of cleanliness necessary for proper execution of the Work and safety of personnel.
2. Remove liquid spills promptly. Where spills may have harmful effects on health, safety, protection of facilities, or the environment, immediately report spills to Owner, Engineer, and authorities having jurisdiction, in accordance with the Contract Documents and Laws and Regulations.
3. Where dust would impair proper execution of or quality of the Work, broom-clean or vacuum entire work area, as necessary.
4. Concealed Spaces: Remove waste material and debris from concealed spaces before enclosing the space.

D. Progress Cleaning – Installed Work:

1. Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of installed materials and equipment, using only cleaning agents and methods specifically recommended by material or equipment Supplier.
2. If Supplier does not recommend specific cleaning agents or methods, use cleaning agents and methods that are not hazardous to health and property and that will not damage or mar exposed surfaces.

E. Progress Cleaning – Exposed Surfaces:

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.

F. Progress Cleaning – Cutting and Patching:

1. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, trailings and cuttings, and similar materials.
2. Thoroughly clean piping, ductwork, conduits, and similar features before applying patching material, paint, or other finishing materials.
3. Restore damaged insulation and coverings on piping, cutwork, and similar items to its pre-construction condition.

G. Cleaning of Hydraulic Structures:

1. Clean hydraulic structures that will contain fluid, such as tanks and channels, in accordance with this Specifications section.
2. Do not perform field quality control activities such as testing tanks, channels, and other hydraulic structures for leakage or disinfecting (where applicable), and do not apply for inspection for Substantial Completion for hydraulic structures, until the associated hydraulic structures are clean and free of all waste materials, and ready for intended use.

H. Waste Disposal:

1. Properly dispose of waste materials (including surplus materials, debris, rubbish, and other waste) off the Site.
2. Do not burn or bury waste materials at the Site.
3. Remove waste material and rubbish from excavations before backfilling.
4. Do not discharge volatile or hazardous substances, such as mineral spirits, oil, or paint thinner, into storm sewers, gutters, sanitary sewers, or other location in the environment. Dispose of such materials in accordance with Laws and Regulations.
5. Do not discharge wastes to surface waters, drainage routes, or groundwater.
6. Contractor is solely responsible for complying with Laws and Regulations regarding storing, transporting, and disposing of waste generated by Contractor's operations or brought to the Site by Contractor.

I. During handling and installation of materials and equipment, clean and protect construction in progress and adjoining materials and equipment already in place. Apply protective covering

where necessary or required for protection from damage or deterioration, until Substantial Completion.

J. Clean completed construction as frequently as necessary throughout the construction period.

3.2 CLOSEOUT CLEANING

A. Complete the following prior to requesting inspection for Substantial Completion:

1. Clean and remove from the Site waste material (including rubbish and debris) and other foreign and undesirable items and substances.
2. Sweep broom-clean paved areas suitable for access by vehicles.
3. Remove spills and stains or petroleum, oils, solvents, other chemicals, and other foreign and undesirable deposits.
4. Hose-clean sidewalks and loading areas.
5. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
6. Surface waterways and drainage routes (including storm sewers, gutters, and ditches) shall be open and clean.
7. Repair pavement, roads, sod, and other areas affected by construction operations and restore to specified condition; if condition is not specified, restore to preconstruction condition.
8. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition, free of spatter, grease, stains, fingerprints, films, and similar foreign and undesirable substances.
9. Clean, wax, and polish wood, vinyl, and painted floors.
10. Remove waste material and surface dust from limited-access spaces, including roofs, plenums, shafts, trenchway, equipment vaults, manholes, and similar spaces.
11. In unoccupied spaces, sweep concrete floors broom-clean.
12. Clean transparent materials, including mirrors and glazing in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.
13. Remove non-permanent tags and labels.
14. Surface Finishes:
    a. Touch-up and otherwise repair and restore chipped, scratched, dented or otherwise marred surfaces to specified finish and match adjacent surfaces.
    b. Do not paint over “UL” or similar labels, including mechanical and electrical nameplates.
15. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint, and mortar droppings, and other foreign or undesirable substances.
16. Clean plumbing fixtures to sanitary condition, free of stains, including stains resulting from water exposure.
17. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
18. Clean lighting fixtures, lamps, globes, and reflectors to function with full efficiency. Replace temporary lamps provided in permanent fixtures. Replace existing lighting fixture components that are burned out or noticeably dimmed from use during construction. Replace defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
19. Leave the Site clean, and in neat, orderly condition, satisfactory to Owner and Engineer.

B. Complete the following prior to requesting final inspection:

1. After Substantial Completion of all the Work, following completion of items of incomplete or damaged Work (“punch list Work”), clean “punch list Work areas in accordance with Paragraph 3.2.A of this Specifications Section.

2. Remove field offices, Contractor's storage sheds, and remaining stockpiles and clean all such areas in accordance with Paragraph 3.2.B of this Specifications Section, and in accordance with Contract Documents for landscaping and restoration.

END OF SECTION

SECTION 01 77 19
CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Administrative and procedural requirements for:

1. Substantial Completion.
2. Final inspection.
3. Request for final payment and acceptance of the Work.

1.2 SUBSTANTIAL COMPLETION

A. Substantial Completion – General:

1. Prior to requesting inspection for Substantial Completion, perform the following for the substantially completed Work:
   a. Materials and equipment for which Substantial Completion is requested shall be fully ready for their intended use, including full operating and monitoring capability in automatic, manual, and other operating modes set forth in the Contract Documents.
   b. Permanent provisions for safety and protection, shown and indicated in the Contract Documents and associated with the substantially completed Work or for personnel accessing and using the substantially completed Work, shall be in place and ready for their intended use.
   c. Complete field quality control Work, including inspections and testing at the Site, indicated in Specifications sections for individual materials and equipment items and related Contract Documents. Submit results of, and obtain Engineer's acceptance of, field quality control tests and inspections required by the Contract Documents.
   d. Cleaning for Substantial Completion shall be completed in accordance with Section 01 74 00.
   e. Submit and obtain Engineer's acceptance of final operations and maintenance manuals in accordance with Section 01 78 36 - Warranties.
   f. Obtain and submit to Engineer all required permits, inspections, and approvals of authorities having jurisdiction for the substantially completed Work to be occupied and used by Owner.
   g. Complete other tasks that the Contract requires be completed prior to Substantial Completion.
2. Procedures for requesting and documenting Substantial Completion are in the General Conditions, as may be modified by the Supplementary Conditions.
3. Sample letter for Contractor's request for inspection for Substantial Completion is attached to this Specifications section. Use the model language of the sample letter, modified to suit the Project and the needs of Contractor's request.
4. Unless decided otherwise by Owner and Engineer, form of certificate of Substantial Completion will be EJCDC C-625, "Certificate of Substantial Completion" (2018 edition or later), prepared by Engineer.
5. Refer to the Agreement and Section 01 29 76, for requirements regarding consent of surety to partial release of or reduction in retainage.

1.3 FINAL INSPECTION

A. Final Inspection – General:

1. Prior to requesting final inspection, verify that all the Work is fully complete and ready for final payment. Partial checklist for this purpose is attached to this Specifications section.
2. Sample letter for Contractor to request final inspection is attached to this Specifications section. Use the model language of the sample letter, modified to suit the Project.
3. Procedures for requesting and documenting the final inspection are in the General Conditions, as may be modified by the Supplementary Conditions, and as augmented in this Specifications section.

1.4 REQUEST FOR FINAL PAYMENT AND ACCEPTANCE OF THE WORK

A. Procedure:

1. After successful completion of the final inspection, submit request for final payment in accordance with the Agreement and General Conditions, as may be modified by the Supplementary Conditions, and using procedure specified in Section 01 29 76, and this Specifications section.
2. Acceptance of the Work:
   a. Upon Engineer's concurrence that the Work is complete and ready for final payment (as a result of the final inspection and other communications between the parties and Engineer) and receipt of the final Application for Payment, accompanied by other required Contract closeout documentation, all in accordance with the Contract Documents, Engineer will issue to Owner and Contractor a notice of acceptability of the Work, in accordance with the General Conditions, as may be modified by the Supplementary Conditions.
   b. Unless decided otherwise by Owner and Engineer, form of acceptance will be EJCDC C-626, "Notice of Acceptability of Work", (2018 edition or later).
   c. Nothing other than receipt of such notice of acceptability from Engineer constitutes acceptance of the Work.
   d. Receipt of Engineer's notice of acceptability of the Work does not relieve Contractor of Contractor's continuing obligations under the Contract, including correction period obligations, warranty obligations, indemnification obligations, insurance requirements, and Contractor's other obligations following acceptance of the Work by Engineer and final payment. Such obligations shall commence and remain in effect as indicated elsewhere in the Contract Documents.

B. Request for final payment shall include:

1. Documents required for progress payments in Section 01 29 76.
2. Documents required in the General Conditions, as may be modified by the Supplementary Conditions.
3. List, on Contractor's letterhead, of all Change Proposals, Claims, and disputes that Contractor believes are unsettled. If there are no such Change Proposals, Claims, or disputes, so indicate in writing.
4. Consent of Surety to Final Payment:
   a. Acceptable form includes AIA G707, "Consent of Surety to Final Payment" (1994 or later edition), or other form acceptable to Owner.
5. Releases of Liens:

a. Submit complete and legally effective releases (satisfactory to Owner) of all Liens filed in connection with the Work, regardless of whether such Lien was filed by Contractor, Subcontractor, or Supplier.

b. Each release of Lien shall be signed by an authorized representative of the entity submitting the release of Lien, and shall include Contractor's, Subcontractor's, or Supplier's (as applicable) corporate seal, when applicable.

6. Waivers of Lien Rights:

a. Submit legally-binding waivers of rights to file Liens, acceptable to Owner, as required in the General Conditions (as may be modified by the Supplementary Conditions) from Contractor and each Subcontractor and Supplier that furnished or provided labor, material, or equipment totaling $1,000 or more for the Work.

b. Furnish final list of Subcontractors and Suppliers indicating final amount of the associated subcontract or purchase order for each. Include on the list all lower-tier Subcontractors and Suppliers retained by higher-tier Subcontractors and Suppliers. Prepare the list using the form included in Section 01 29 76.

c. Each waiver of Lien rights shall be signed by an authorized representative of the entity submitting waiver of Lien rights, and shall include Contractor's, Subcontractor's, or Supplier's (as applicable) corporate seal, when applicable.

d. Waiver of Lien rights may be conditional upon receipt of final payment.

e. Required Affidavits: Submit the following:

1) Affidavit of payment of debts and claims, submitted by Contractor. Acceptable form includes AIA G706, "Contractor's Affidavit of Payment of Debts and Claims" (1994 or later edition), or other form acceptable to Owner, and;

2) Affidavit of release of Liens, submitted by Contractor. Acceptable form includes AIA G706A, "Affidavit of Release of Liens" (1994 or later edition).

3) Each affidavit shall be signed by an authorized representative of Contractor and shall bear Contractor's corporate seal, as applicable.

f. In the event Contractor is unable to obtain one or more required waivers of Lien rights, recourse is set forth in the General Conditions, as may be modified by the Supplementary Conditions.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION

3.1 ATTACHMENTS

A. The documents listed below, following this Specification section's "End of Section" designation, are part of this Specifications section:

1. Sample letter for Contractor's use in requesting inspection for Substantial Completion (two pages).
2. Sample partial checklist to identify readiness for final inspection (four pages).
3. Sample letter for Contractor's use in requesting final inspection (one page).

B. In the model language of the attached sample letters for Contractor to request inspection for Substantial Completion and the final inspection, italicized language in brackets, e.g., "[*insert date*]" indicates instructions to the drafter of the letter and often indicates specific information to be inserted by Contractor; do not include bracketed, italicized text in the final version of the letter(s) prepared for the Project. Non-italicized

language in brackets is optional language; use the appropriate language to complete the actual letter for the Project and edit where required to suit the specific circumstances.

END OF SECTION

SAMPLE LETTER FOR CONTRACTOR'S USE IN REQUESTING INSPECTION FOR SUBSTANTIAL COMPLETION

SENT VIA E-MAIL AND U.S. CERTIFIED MAIL/RETURN RECEIPT REQUESTED

[Date]

[Name of Engineer's contact person]
HDR
[Street address]
[City, state, postal code]

Subject:
[Project name, Contract designation]
Request for Inspection for Substantial Completion

Dear [addressee]:

In our opinion, [all of] [or] [a portion of] the Work under the above-referenced Contract is substantially complete as of [insert month, day, year on which Substantial Completion was achieved]. [The specific portion of the Work that we believe is substantially complete is [insert identification of that portion of the Work that is substantially complete].]

Enclosed is our listing of uncompleted Work items ("punch list"). In accordance with Paragraph 15.03.A of the General Conditions, we hereby request: (1) That the Engineer schedule and perform the inspection for Substantial Completion as soon as possible, and (2) Issuance of the certificate of Substantial Completion.

In accordance with Paragraph 15.03.D of the General Conditions, upon Substantial Completion, we propose the following relative to apportionment of responsibilities between the Owner and the Contractor:

1. Security, Protection, Insurance:
    a. Site Security: [insert proposal; address whether Owner or Contractor will be responsible for security of the Site].
    b. Protection of the Substantially Completed Work: [insert proposal; address whether Owner or Contractor will be responsible for protection].
    c. Property Insurance: [insert proposal; typically Owner assumes responsibility for property insurance upon Substantial Completion]
2. Operation and Maintenance:
    a. Operation: [insert proposal; address whether Owner or Contractor will be responsible for operating the substantially completed Work].
    b. Maintenance: [insert proposal; address whether Owner or Contractor will be responsible for maintaining the substantially completed Work].
3. Utilities: [for each of the following, indicate whether Owner or Contractor will be responsible for utilities and services, or whether responsibility will be shared; if shared, indicate proposed cost-sharing]
    a. Electricity: [insert proposal].
    b. Natural Gas/Fuel/Heating: [insert proposal].

c. Water Supply: [insert proposal].

d. Wastewater: [insert proposal].

e. Communications (Telephone, Internet, Video): [insert proposal].

In accordance with Paragraph 15.08.A of the General Conditions, we understand that the Contract's correction period for the Work covered by the certificate of Substantial Completion commences on the Substantial Completion date documented in said certificate. [Drafter: Also see Paragraph 15.04 ("Partial Utilization") of the General Conditions and, where necessary, edit this paragraph of the letter accordingly.]

Should you have questions or comments regarding this notice, please contact [the undersigned] [or] [insert other contact person's name], at [insert telephone number and e-mail address].

Sincerely,

[Contractor's company name]

[Signatory name]
[Signatory's title]

Attachments:
Preliminary list of uncompleted Work items ("punch list"; [##] pages)

Copies:
[Owner's project manager]

SAMPLE PARTIAL CHECKLIST TO IDENTIFY READINESS FOR FINAL INSPECTION

Project: [_____]
Contract: [_____]
Contractor: [_____]

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
1. All Submittals, including all Shop Drawings and Samples, approved or accepted by Engineer	☐		☐	☐	☐		
Remarks:							
1. Final services completed by Suppliers, including submittal of "Manufacturer Field Service Report"	☐		☐	☐	☐		
Remarks:							
2. Final Work completed by Subcontractors	☐		☐	☐	☐		
Remarks:							
3. Permits closed out and regulatory compliance transitioned from construction to operations	☐		☐	☐	☐		
Remarks:							
4. All outstanding change issues are addressed and all Change Proposals submitted	☐		☐	☐	☐		
Remarks:							

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
5. All Change Proposals and Claims are resolved	☐		☐	☐	☐		
Remarks:							
6. All defective Work of which Contractor is aware has been corrected in accordance with the Contract Documents	☐		☐	☐	☐		
Remarks:							
7. Issues related to Constituents of Concern and potential Hazardous Environmental Condition have been fully addressed	☐		☐	☐	☐		
Remarks:							
8. All spare parts, tools, and extra materials have been furnished in accordance with the Contract Documents, and documentation thereof submitted to Engineer	☐		☐	☐	☐		
Remarks:							
9. All final operations & maintenance manuals have been submitted and accepted by Engineer	☐		☐	☐	☐		
Remarks:							
10. Manufacturer warranties and software license(s) furnished	☐		☐	☐	☐		
Remarks:							

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
11. Instruction and training of operations and maintenance personnel is complete and records of training submitted	☐		☐	☐	☐		
Remarks:							
12. MBE/WBE/DBE/VBE compliance report(s) submitted (when applicable)	☐		☐	☐	☐		
Remarks:							
13. All field engineering Submittals, including survey data, furnished	☐		☐	☐	☐		
Remarks:							
14. All Work on “punch list” is complete in accordance with the Contract Documents	☐		☐	☐	☐		
Remarks:							
15. All record documents submitted to and accepted by Engineer	☐		☐	☐	☐		
Remarks:							
16. Contractor is fully demobilized from the Site	☐		☐	☐	☐		
Remarks:							
17. All Site restoration is complete	☐		☐	☐	☐		
Remarks:							
18. Final cleaning of all work areas is complete	☐		☐	☐	☐		

Item No./Description	Completed/Date		In Progress	Not Started	Not Applicable	Target Date	Responsible Entity/Person
Remarks:							
19. Releases of Liens and waivers of Lien rights (or acceptable alternative) obtained from Subcontractors and Suppliers	☐		☐	☐	☐		
Remarks:							
20. Evidence of Contractor liability insurance furnished for correction period	☐		☐	☐	☐		
Remarks:							
21. All other required Contract closeout documents obtained	☐		☐	☐	☐		
Remarks:							
Remarks:							
22. All other Work and documentation required prior to final payment is complete and provided in accordance with the Contract Documents	☐		☐	☐	☐		
Remarks:							

SAMPLE LETTER FOR CONTRACTOR'S USE IN REQUESTING FINAL INSPECTION

SENT VIA E-MAIL AND U.S. CERTIFIED MAIL/RETURN RECEIPT REQUESTED

[Date]

[Name of Engineer's contact person]
HDR
[Street address]
[City, state, postal code]

Subject:
[Project name, Contract designation]
Request for Final Inspection

Dear [addressee]:

The Work under the above-referenced Contract is complete and ready for final payment as of [insert month, day, year on which final completion was achieved]. In accordance with Paragraph 15.05 of the General Conditions, we hereby request that the Engineer schedule and perform the final inspection as soon as possible. Upon successful completion of the final inspection, we will submit our final Application for Payment accompanied by the required Contract closeout documentation in accordance with the Contract Documents.

Should you have questions or comments regarding this notice, please contact [the undersigned] [or] [insert other contact person's name], at [insert telephone number and e-mail address].

Sincerely,

[Contractor's company name]

[Signatory name]
[Signatory's title]

Attachments:
None

Copies:
[Owner's project manager]

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SECTION 01 78 36
WARRANTIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. General requirements for warranties required in the various Specifications.
2. Provisions addressing:
   a. Suppliers' standard warranties.
   b. Suppliers' special or extended warranties.
   c. Implied warranties.
   d. Commencement and duration of warranties.

1.2 SUBMITTALS

A. General:

1. For each item of equipment furnished under the Contract, submit Supplier's standard warranty, regardless of whether such warranty or Submittal thereof is required by the associated Specifications for that item. Submit such warranties for materials where such Submittal is required in the Specifications for the material.
2. For each item of material or equipment where Supplier's special (or extended) warranty is required by the Contract Documents, submit appropriate special warranty that complies with the Contract Documents.
3. Supplier's warranties shall be specifically endorsed to Owner, Contractor, and the entity purchasing the item (if other than Contractor) by the entity issuing such warranty.
4. Submit Suppliers' standard warranties and special warranties as Submittals in accordance with the Schedule of Submittals accepted by Engineer.

1.3 CONTRACTOR'S GENERAL WARRANTY AND CORRECTION PERIOD OBLIGATIONS

A. Contractor's General Warranty and Guarantee: Comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.

B. Contractor's Warranty of Title: Comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.

C. Correction Period: Comply with requirements of the General Conditions, as may be modified by the Supplementary Conditions.

1.4 SUPPLIERS' WARRANTIES FOR MATERIALS AND EQUIPMENT

A. Warranty Types:

1. Required by the General Conditions:
   a. Warranties specified for materials and equipment shall be in addition to, and run concurrent with, Contractor's general warranty and guarantee and requirements for the Contract's correction period.
   b. Disclaimers and limitations in specific materials and equipment warranties do not limit Contractor's general warranty and guarantee, nor does such affect or limit Contractor's performance obligations under the correction period.
2. Material or equipment manufacturer's standard warranty is pre-printed, written warranty published by item's manufacturer and specifically endorsed by manufacturer to the entities indicated in this Specifications Section's Article 1.2.
3. Special warranty is written warranty that either extends the duration of material or equipment manufacturer's standard warranty or provides other, increased rights to Owner

and other beneficiaries (if any) of such warranty. Where the Contract Documents indicate specific requirements for warranties that differ from the manufacturer's standard warranty for that item, special warranty is implied.

B. Requirements for Special Warranties:

1. Submit written special warranty document that contains appropriate provisions and identification, ready for signature by material or equipment manufacturer, Owner, and other beneficiaries indicated in Article 1.2 of this Specifications Section. Submit draft warranty with Submittals required prior to fabrication and shipment of the item from the Supplier's facility.
2. Manufacturer's Standard Form: Modified to include Project-specific information and properly signed by product manufacturer and other entities as appropriate.
3. Specified Form: When specified forms for special warranties are included in the Contract Documents, prepare written document, properly signed by item manufacturer, Owner, and other beneficiaries indicated in Article 1.2 of this Specifications Section, using the required form.
4. Refer to the Specifications for content and requirements for submitting special warranties.

1.5 IMPLIED WARRANTIES

A. Warranty of Title and Intellectual Property Rights:

1. Except as may be otherwise indicated in the Contract Documents, implied warranty of title required by Laws and Regulations is applicable to the Work and to materials and equipment incorporated therein.
2. Provisions on intellectual property rights, including patent fees and royalties, are in the General Conditions, as may be modified by the Supplementary Conditions.

B. Warranty of Merchantability:

1. Notwithstanding any other provision of the Contract to the contrary, implied warranties of merchantability required by Laws and Regulations apply to the materials and equipment incorporated into the Work.

C. Warranty of Fitness-for-Purpose:

1. When Supplier is aware of, or has reason to be aware of, specified materials or features of the Work that are contrary to the intended use, purpose, service, application, or environment in which the material or item will be used, submit request for interpretation. Where appropriate, such request for interpretation shall indicate the apparent discrepancy and propose appropriate, alternative materials or equipment.

1.6 COMMENCEMENT AND DURATION OF WARRANTIES

A. Commencement of Warranties:

1. Contract correction period and Contractor's general warranty commence as indicated in the General Conditions, as may be modified by the Supplementary Conditions.
2. Suppliers' standard warranties and special warranties commence running on the date that the associated item is certified by Engineer as substantially complete in accordance with the Contract Documents. In no event shall special warranties commence running prior to Engineer's review and acceptance of special warranty Submittal for the item.
3. Implied warranties commence in accordance with Laws and Regulations.

B. Duration of Warranties:

1. Duration of correction period is set forth in the General Conditions, as may be modified by the Supplementary Conditions.
2. Duration of Contractor's general warranty and guarantee is in accordance with Laws and Regulations.
3. Duration of Suppliers' standard warranties is in accordance with the applicable standard warranty document accepted for the Project by Engineer.

4. Duration of required Suppliers' special warranties shall be in accordance with the requirements of the Contract Documents for the subject item.
5. Duration of implied warranties shall be in accordance with Laws and Regulations.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 01 78 39
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Requirements for Project record documents, to supplement record documents requirements of the General Conditions, as may be modified by the Supplementary Conditions.

B. Scope:

1. Contractor shall provide all labor, materials, equipment, and services to establish, maintain, continuously update, and submit to Engineer Project record documents in accordance with the Contract Documents.

C. Related Sections include but are not necessarily limited to:

1. Section 01 29 76.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Obtain necessary field measurements and record all data required for Project record documents before covering up the Work or building on subsequent phases of the Work.
2. Promptly after obtaining measurements and information, record the data and information on Project record documents.
3. Where a licensed, registered professional land surveyor in the state of North Carolina is retained on the Project, whether by Contractor or others, to perform field measurements and record other data for as-constructed Project or Site conditions, coordinate with such entity and schedule and perform the Work accordingly. Allow surveyor sufficient timte and proper conditions for performing surveyor's work. Assist the surveyor as necessary in performance of surveyor's responsibilities.

B. Monthly Status Evaluation:

1. Not less than once per month, as a condition precedent to submitting Application for Payment, Contractor's site superintendent will meet with either Engineer at the Site to review status of Contractor's Project record documents.
2. When Engineer directs corrections to Project record documents, promptly make such corrections on the Project record documents. Engineer's directions or lack thereof do not in any way relieve or mitigate Contractor's sole responsibility for the accuracy, completeness, and clarity of Project record documents.
3. Requirements for review of record documents status as a condition precedent to progress payments is in Section 01 29 76.

1.3 QUALITY ASSURANCE

A. Qualifications:

1. Recorder of Changes and Field Conditions on Project Record Documents:
   a. Contractor's staff at the Site shall include not less than one person with suitable training and drafting (drawing) experience to record on the Project record documents changes made and field conditions encountered.

1.4 SUBMITTALS

A. Action Submittals: Submit the following:

1. Samples:

a. Sample of field-recorded project record documents from prior projects, in accordance with this Specifications section's "Quality Assurance" Article, to establish quality and style for markups of Project record documents. Submit within 15 days of the date the Contract Times commence running.

B. Closeout Submittals: Submit the following:

1. Record Documentation:
   a. Prior to readiness for final payment, submit to Engineer one copy of Project's final record documents and obtain Engineer's acceptance of same. Submit complete record documents; do not make partial Submittals without Engineer's concurrence.
   b. Submit the following Project record documents:
      1) Record Drawings, including those issued via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
      2) Record project manual, including Specifications, indicating changes made via Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
   c. Submit record documents with transmittal letter on Contractor's letterhead in accordance with requirements in Section 01 33 00.
2. Certifications:
   a. Record documents Submittal shall include certification, with original signature of official authorized to sign legally-binding contracts on behalf of Contractor, reading as follows:
      1) (Contractor's legal/contractual entity name) has maintained, continuously updated, and submitted Project record documentation in accordance with the General Conditions and Supplementary Conditions, Section 01 78 39, and other elements of Contract Documents, for the [Owner's organization's name], [Municipality and state of the Site], [Site name and Project name]. We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and that the record documents comply with the requirements of the Contract Documents.

         By: [_____] (signature)
         Print Name: [_____]
         Title: [_____]

1.5 MAINTENANCE OF RECORD DOCUMENTS

A. Maintain in Contractor's field office, in clean, dry, legible condition, complete sets of the following record documents:

1. Drawings, Specifications, and Addenda;
2. Shop Drawings, Samples, and other Submittals, including records of test results, approved or accepted as applicable, by Engineer;
3. Change Orders, Work Change Directives, Field Orders, allowance authorizations;
4. copies of all interpretations and clarifications issued;
5. photographic documentation;
6. survey data; and
7. all other documents pertinent to the Work.

B. Provide files and racks for proper storage and easy access to Project record documents. File record documents in accordance with the edition of the Construction Specification Institute's *MasterFormat* used for organizing the project manual, unless otherwise accepted by Engineer.

C. Promptly make Project record documents available for observation and review upon request of Engineer or Owner.

D. Do not use Project record documents for any purpose other than serving as Project record. Do not remove Project record documents from Contractor's field office without Engineer's approval.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

A. Recording Changes, Field Conditions, and Other Information – General:

1. At the start of the Project, label each record document to be submitted as, "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be two inches high.
2. Keep record documents current consistent with the progress of the Work. Make entries on record documents within two working days of receipt of information required to record the change, field condition, or other pertinent information.
3. Do not permanently conceal the Work until required information has been recorded for Project record documents.
4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Engineer-accepted Project record documents.
5. Marking of Entries:
    a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to Project record documents.
    b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files in "portable document format" (.PDF) files.
    c. Date each entry on record documents.
    d. Indicate changes by drawing a "cloud" around the change(s) indicated.
    e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:

1. Record changes on copy of the Drawings. Submittal of Contractor-originated or -produced drawings as a substitute for recording changes on a copy of the Drawings is unacceptable.
2. Record changes on plans, sections, elevations, schematics, schedules, and details as required for clarity, accuracy, and completeness, making reference dimensions and elevations (to Project datum) for complete record documentation.
3. Record actual construction including:
    a. Depths of various elements of foundation relative to Project datum.
    b. Horizontal and vertical location of Underground Facilities referenced to permanent surface improvements and Project elevation datum. For each Underground Facility, including pipe fittings, show and indicate dimensions to not less than two permanent, visible surface improvements.
    c. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure and, where applicable, to Project elevation datum.
    d. Changes in structural and architectural elements of the Work, including changes in reinforcing.
    e. Field changes of dimensions, arrangements, and details.
    f. Changes made in accordance with Addenda, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.
    g. Changes in details on the Drawings. Submit additional details prepared by Contractor when required to document such changes.
4. Recording Changes for Schematic Layouts:

a. In some cases on the Drawings, arrangements of conduits, circuits, piping, ducts, and similar items are shown schematically and are not intended to portray physical layout. For such cases, the final physical arrangement shall be determined by Contractor subject to acceptance by Engineer.

b. Record on the Project record documents all revisions to schematics on the Drawings, including: piping schematics, ducting schematics, process and instrumentation diagrams, control and circuitry diagrams, electrical one-line diagrams, motor control center layouts, and other schematics when included in the Drawings. Show and indicate actual locations of equipment, lighting fixtures, in-place grounding system, and other pertinent data.

c. When dimensioned plans and dimensioned sections or elevations on the Drawings show the Work schematically, indicate on the Project record documents, by dimensions accurate to within one inch in the field, centerline location of items of Work such as conduit, piping, ducts, and similar items

1) Clearly identify each item of the Work by accurate notations such as “cast iron drain”, “rigid electrical conduit”, “copper waterline”, and similar descriptions.

2) Show by symbol or by note the vertical location of each item of the Work; for example, “embedded in slab”, “under slab”, “in ceiling plenum”, “exposed”, and similar designations. For piping not embedded, also indicate elevation dimension relative to Project elevation datum.

3) Descriptions shall be sufficiently detailed to be related to the Specifications.

d. Engineer may furnish written waiver of requirements relative to schematic layouts shown on plans, sections, and elevations when, in Engineer’s judgment, dimensioned layouts of Work shown schematically will serve no useful purpose. Do not rely on such waiver(s) being issued.

5. Supplemental Drawings:

a. In some cases, drawings produced during construction by Engineer or Contractor supplement the Drawings and shall be included with Project record documents submitted by Contractor. Supplemental record drawings shall include drawings or sketches that are part of Change Orders, Work Change Directives, Field Orders, and allowance authorizations and that cannot be incorporated into the Drawings because of space limitations.

b. Supplemental drawings submitted with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.

C. Specifications and Addenda:

1. Mark each Specifications section to record:

a. Manufacturer, trade name, catalog number, and Supplier of each material and equipment item actually furnished.

b. Changes made by Addendum, Change Orders, Work Change Directives, Field Orders, and allowance authorizations.

1.7 ELECTRONIC DOCUMENTS FURNISHED BY ENGINEER

A. CAD, BIM, or CIM files of the Drawings will be furnished by Engineer upon the following conditions:

1. Contractor shall submit to Engineer a letter on Contractor letterhead requesting CAD, BIM, or CIM files of the Drawings and indicating specific definition(s) or description(s) of how such Electronic Documents will be used by Contractor, and specific description of benefits to Owner (including credit proposal, if applicable) if the request is granted.

2. Engineer does not guarantee that Electronic Documents are available in the format(s) requested by Contractor. Some projects may have Drawings developed using only CAD software instead of BIM or CIM software. Engineer will not create BIM or CIM files for Contractor if such files do not already exist.

3. Contractor shall sign Engineer's standard agreement with Contractor for for release of Electronic Documents and shall abide by the provisions of such agreement for release of Electronic Documents.
4. Layering system incorporated in CAD, BIM, and CIM files shall be maintained as transmitted by Engineer. CADD, BIM, and CIM files transmitted by Engineer containing cross-referenced files shall not be bound by Contractor. Drawing cross-references and paths shall be maintained. If Contractor alters layers or cross-reference files, Contractor shall restore all layers and cross-references prior to submitting Project record documents to Engineer.
5. Contractor shall submit Project record drawings to Engineer in same CAD, BIM, or CIM format that files were furnished to Contractor..

B. Microsoft Word files of Specifications:

1. Requirements for Engineer's potential release of word processing files of the Specifications or other written documents in native format are the same as those for Drawings.
2. When Specifications are released in native format, Contractor shall submit record specifications in the same format, with all changes tracked using Microsoft Word's "track changes" feature.
3. Do not modify the formatting of the native files furnished by Engineer. If formatting changes are made without Engineer's authorization, remedy the formatting to the same condition and status as when the files were first delivered to Contractor. Such remedy shall be at Contractor's expense.
4. Comply with all requirements of this Specifications section regarding record specifications.
5. After delivery of record specifications Submittal to Engineer, delete from Contractor's files the native word processing files. Contractor may retain a PDF version of such files for Contractor's records.

PART 2 - PRODUCTS - (NOT USED)

PART 3 - EXECUTION - (NOT USED)

END OF SECTION

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SECTION 33 01 36
MANHOLE REHABILITATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Requirements for rehabilitating existing manholes, including lining.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00.
2. Division 01.
3. Section 33 01 32.
4. Section 33 01 33.

1.2 QUALITY ASSURANCE

A. Qualifications:

1. Contractor or Subcontractor to perform manhole rehabilitation and manhole lining:
    a. Prepared to complete the work.
        1) In a manner:
            a) Timely.
            b) Satisfactory.
        2) Fully:
            a) Qualified.
            b) Experienced.
            c) Equipped.
2. Applicator/subcontractor:
    a. For each product:
        1) Licensed, certified and/or approved.
            a) In writing.
            b) By manufacturer.
    b. Minimum experience:
        1) Successfully installed and completed:
            a) Five projects:
                (1) In last five years
                (2) With similar scope and products.
            b) 500 manholes:
                (1) With proposed manhole rehabilitation system.
    c. Capable of providing crews as needed.

1) To complete work without undue delay.

B. Mock-Up:

1. Construct temporary mock-up board for cementitious liner and epoxy liner with a minimum 4 x 4 sq.ft. area utilizing all specified or required components for OWASA's Engineer to review and accept.
2. Area shall constitute minimum standard of quality for actual construction.
3. Remove mock-up board when directed by OWASA's Engineer.
4. Mock-up board shall include all corners, coves, bases, and other special detailing as required by project conditions.
5. Mock-up board shall be made up of the same finish as is to be expected in actual work.
6. Mock-up substrate surface moisture content shall be the same as moisture content to be expected in actual work.

C. Referenced Standards:

1. ASTM International (ASTM), latest revision of each:
   a. C109 – Compressive Strength of Hydraulic Cement Mortars.
   b. C150 – Portland Cement.
   c. C177 – Thermal Conductivity.
   d. C191 – Time of Setting of Hydraulic Cement by Vicat Needle.
   e. C234 – Comparing Concrete on the Basis of the Bond Developed with Reinforcing Steel.
   f. C267 – Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings and Polymer Concretes.
   g. C293 – Flexural Strength of Concrete.
   h. C309 – Liquid Membrane Forming Compounds for Curing Concrete.
   i. C321 – Bond Strength of Chemical-Resistant Mortars.
   j. C457 – Microscopical Determination of Parameters of the Air-Void System in Hardened Concrete.
   k. C496 – Splitting Tensile Strength of Cylindrical Concrete Specimens.
   l. C596 – Drying Shrinkage of Mortar Containing Portland Cement.
   m. C579B – Compressive Strength of Chemical-Resistant Mortars, Grouts and Monolithic Surfacing.
   n. C642 – Density, Absorption, and Voids in Hardened Concrete.
   o. C666 – Resistance of Concrete to Rapid Freezing and Thawing.
   p. C882 – Bond Strength of Epoxy-Resin Systems Used with Concrete by Shear Slant.
   q. C900 – Pullout Strength of Hardened Concrete.
   r. C1072 – Measurement of Masonry Flexural Bond Strength.
   s. C1244 – Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test Prior to Backfill.
   t. D368 – Tensile Properties of Plastics.
   u. D412 – Vulcanized Rubbers and Thermoplastic Elastomers-Tension.
   v. D638 – Tensile Properties of Plastics.

w. D790 – Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.

x. D903 – Peel or Stripping Strength of Adhesive Bonds.

y. D1004 – Tear Resistance (Graves Tear) or Plastic Film and Sheeting.

z. D1737 – Flexibility.

aa. D2240 – Rubber Property – Durometer Hardness.

bb. D4060 – Abrasion Resistance.

cc. D4414 – Plain and Steel-Laminated Elastomeric Bearings for Bridges.

dd. D4541 – Adhesion.

ee. D4787 – Continuity Verification of Liquid or Sheet Lining Applied to Concrete Substrates.

ff. E96 – Permeability.

gg. F1869 – Measuring Moisture Vapor Emission Rate of Concrete.

hh. F2414-04 – Sealing Sewer Manholes Using Chemical Grouting.

ii. G14 – Impact.

D. Occupational Safety and Health Administration (OSHA).

1.3 SUBMITTALS

A. Shop Drawings:

1. See Section 01 33 00.

B. Existing manhole condition:

1. Photographs and/or videos.
    a. Digital.
2. After cleaning.
3. After final product installation.

C. Mock-up, see requirements in this section.

D. Product technical data:

1. Acknowledgement that products submitted meet requirements of standards referenced.
2. Manufacturer’s installation instructions.
3. Complete characteristics:
    a. Physical.
    b. Chemical.
4. Chemical resistance information.
5. Manufacturer’s recommendations for:
    a. Coating.
    b. Adhesives.
    c. Primer.
    d. Grout.

e. Patch material.

f. Crack fillers.

g. Thinners.

6. Warranty documentation.

E. Applicator's qualifications.

F. References:

1. Document experience required in paragraph 1.2A.2.b above.

2. Include:

a. Type of installation.

b. Square footage of material installed.

c. Client contact:

1) Name.

2) Telephone number.

1.4 MATERIAL SUBSTITUTION

A. Materials specified are for specific service indicated.

B. Substitute products or manufacturers will be accepted if:

1. They are standard manhole or collection system products.

2. OWASA's Engineer is satisfied that they are equal:

a. In:

1) Composition.

2) Durability.

3) Usefulness.

4) Convenience.

b. For intended purpose.

3. The following minimum conditions are met:

a. Proposed coating system:

1) Has dry film thickness equal to or greater than that of specified system.

2) Employs a multi-coat system equal to number of coats specified.

3) Employ coating of same generic type.

4) Has been used in at least ten (10) similar projects:

a) All at least three (3) years old.

b) Where coating has been applied to similar:

(1) Exposure.

(2) Application.

b. Request for substitution includes:

1) Full information from manufacturer for application:

a) Descriptive literature.

b) Directions.

c) Copy of warranty.

2) Complete information:

a) Generic type.

b) Non-volatile content by volume.

c. If above data appears to be in order:

1) OWASA's Engineer may require Contractor to provide certified laboratory data sheets showing test results:

a) Complete:

(1) Spectrographic.

(2) Durability.

b) Performed:

(1) On proposed substitute.

(2) By testing laboratory:

(a) Independent.

(b) Approved by OWASA's Engineer.

c) All testing costs borne by Contractor.

d. OWASA's Engineer shall be sole and final judge of any proposed substitution's acceptability.

C. Requests for substitution must be approved in writing.

1.5 WARRANTY

A. For cementitious liner and epoxy liner:

1. Provide three-year warranty:

a. For defects in:

1) Material.

2) Installation.

b. From:

1) Coating manufacturer.

2) Applicator.

2. Warrant product from:

a. Delaminating from substrate.

b. Degradation of finish.

c. Cracking.

d. Spalling.

e. Corrosion of substrate due to defects in finish.

3. During warranty period, either:

a. Repair all lining defects.

1) In manner satisfactory to OWASA's Engineer.

b. Re-apply lining

1) At no cost to OWASA.

4. Two years following substantial completion of manhole rehabilitation work:

a. OWASA's Engineer will inspect work to ensure proper performance.

b. If any deficiencies are found:

1) Repair at no additional cost to OWASA.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Avoid damaging materials:

1. Including:

a. Chemical grouts.

b. Cementitious materials.

c. Any other manhole rehabilitation products.

2. During:

a. Shipping.

b. Handling.

c. Placement.

B. Store materials:

1. In manner recommended by manufacturer.

C. Damaged materials:

1. Any materials that:

a. Show deterioration, or

b. Have been exposed to any adverse storage condition that may have caused damage.

1) Even though no such damage can be seen.

2. Shall be:

a. Marked as rejected.

b. Removed at once from the work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with Contract Documents, the following manufacturers are acceptable:

1. Hydrophilic polyurethane chemical grout:

a. Avanti.

b. Approved equal.

2. Cementitious liner:

a. Quadex Aluminaliner, by Quadex, Inc.

b. SewperCoat, by LaFarge Aluminates.

c. High Performance Mix, by StrongSeal Systems.
d. Cemtec Silatec CAM, by A.W. Cook Cement, Inc.
e. Permaform, by AP/M.
f. Approved equal.

3. Epoxy liner:
   a. Raven 405, by Raven Lining Systems.
   b. SprayRoq.
   c. Approved equal.
4. Frame/Cone seal:
   a. Flex Seal Utility Sealant, by Sealing Systems, Inc.

B. Submit request for substitution in accordance with Section 01 25 00.

2.2 MATERIALS

A. Infiltration Control Material (Chemical Grout)

1. Stop active leaks and infiltration by injecting:
   a. Chemical grout.
   b. Through source.
   c. To outside of manhole.
2. Grout material:
   a. Shall be one of the following gels:
      1) Acrylamide.
      2) Acrylic.
      3) Urethane.
   b. Might require adding:
      1) Shrink control agent.
      2) Gel reinforcing agent.
      3) Accelerator.
   c. Required properties:
      1) Volume stable.
      2) Minimum compressive strength:
         a) One-day: 50 psi.
         b) 28-day: 250 psi.
   d. Suitable for specific application:
      1) Per manufacturer’s recommendation.
      2) Formula suitable for frost exposure.
         a) If applicable for regional climate.
      3) Use hydrophilic polyurethane chemical grout for:
         a) Drilling and injection method.

b) Exterior chemical curtain grouting method.

B. Patching Material:

1. Used:
   a. In non-leaking:
      1) Holes.
      2) Cracks.
      3) Voids.
   b. To:
      1) Patch.
      2) Fill.
      3) Repair.
2. Shall be:
   a. Quick-setting (less than 30 minutes).
   b. Non-shrink.
   c. Fiber reinforced.
   d. Corrosion resistant.
   e. Calcium aluminate.
      1) Or equivalent material.
   f. Compatible with chosen liner system.
   g. Applied per manufacturer's written recommendation for basecoat materials.
   h. Minimum requirements:

Compressive Strength	ASTM C109	>500 psi (1 hour)
Ultimate Compressive Strength	ASTM C109	5,000 psi
Bond Strength	ASTM C882	>1,700 psi
Applied Density		105 pcf
Shrinkage	ASTM C596	0% at 90% R.H.

C. Cementitious Liner:

1. Calcium aluminate mortar.
2. Designed to:
   a. Stop infiltration.
   b. Restore structural integrity.
   c. Protect against microbiologically-induced corrosion.
3. Spray applied to:
   a. Form a structurally-enhanced monolithic liner.
   b. Cover all interior substrate surfaces.
4. Minimum requirements:

Compressive Strength	ASTM C109	>3,000 psi (28 days)
Tensile Strength	ASTM C900	>800 psi
Flexural Strength	ASTM C293	>1,200 psi (28 days)

Shrinkage @ 90% R.H.	ASTM C596	<0.08% (28 days)
Freeze/Thaw	ASTM C666	No damage after 300 cycles
Air Void Content	ASTM C457	2-4% (7 days)
Specific Gravity/Absorption Test	ASTM C642	3-5% (7 days)
Bond Strength	ASTM C882	>1,600 psi (28 days)

D. Frame/Cone Seal:

1. Applied seals
    a. Achieved by applying a urethane resin compound:
        1) To internal surface between:
            a) Manhole frame.
            b) Cone section.
        2) To stop inflow under manhole frame.
    b. Seal to remain flexible.
        1) Allow for repeated frame movements:
            a) Vertical or horizontal.
            b) Due to:
                (1) Frost lift.
                (2) Ground movement.
                (3) Thermal movement of pavement.
    c. Minimum thickness: 120 mils.
    d. Requirements:

Hardness	ASTM D2240	75
Tensile Strength	ASTM D412	1,150 psi
Elongation	ASTM D412	800%
Adhesive Strength	ASTM D903	175 lb. l/inch
Tear Resistance	ASTM D1004	155 lb. l/ inch

E. Water:

1. All water used on project:
    a. Clean.
    b. Potable.

F. Manhole Cured-in-Place (CIP):

1. Cured-in-Place (CIP) Bag Liners
    a. Seamless manhole formed in place, within existing manhole extending from channel to frame.
        1) Structurally independent of existing manhole structure.
        2) Liner thickness – Designed by manufacturer related to location, loads, water table, and condition of manhole.
    b. Multiple structural layers of fiberglass with non-porous membrane layer between fiberglass or Polyvinyl Chloride/Polyester (PVCP) liner.
        1) Fiberglass layer formed to manhole interior under pressure and cured with heat.

c. Liner fabricated to match manhole dimensions for custom fit.
    1) Continuous length from bench to manhole frame, just below cover seat.
        a) Pieced together length: Not acceptable.
        b) Separate lining allowed for channel – Compatible with bag liner.
    2) Stencil material type and name on liner – Viewable from inside.
d. Epoxy resin:
    1) Polyamide Bisphenol “A” Epichlorodhydrin for use with fiberglass liner.
    2) Modified epoxy resin for use with PVCP liner.
e. Approved manufacturers:
    1) Terre-Hill:
        a) Multi-Plexx Liner System.
    2) Poly-Triplex Technologies:
        a) Poly Triplex Liner System.
    3) Or equal.

PART 3 - EXECUTION

3.1 GENERAL

A. Perform manhole rehabilitation after other improvements are complete.

B. Perform chemical grout repair per:
    1. ASTM F2414-04.
    2. Manufacturer’s recommended installation methods.

C. Prepare surface and install liner system:
    1. Per manufacturer’s recommended procedures.
    2. Each manhole to be rehabilitated:
        a. Clean thoroughly.
        b. Then inspect for:
            1) Loose or missing bricks.
            2) Loose mortar.
            3) Holes.
        c. Remove any protrusions or obstructions into manhole.
        d. Eliminate any observed infiltration leaks.
            1) Prior to applying manhole lining system.

D. Material application:
    1. Only by technicians:
        a. Factory trained.
        b. Fully qualified.

3.2 SURFACE PREPARATION

A. Clean manholes per Section 33 01 32.

1. Before and after cleaning:
    a. Visually inspect.
    b. Take digital photographs.

B. Notify OWASA's Engineer immediately if:

1. Due to existing conditions, a manhole is determined not to be:
    a. Structurally sound,
    b. Capable of coating.

C. Surface preparation work to be inspected and approved:

1. By:
    a. OWASA's Engineer.
    b. Contractor.
2. Prior to installing coating.

D. Notify OWASA's Engineer when manholes are ready for inspection.

1. Plug or seal:
    a. All infiltration leaks:
        1) Active.
        2) Hydrostatic.
        3) Including those in:
            a) Existing invert channels.
            b) Benches.
    b. With an appropriate grout:
        1) Compatible with lining.
            a) As recommended by manufacturer.
        2) May include:
            a) Injection grouting.
            b) Manufacturer's approved leak-stopping material.
2. Remove:
    a. Completely.
    b. From inside manhole.
    c. All:
        1) Roots.
        2) Organic matter.
        3) Loose mortar and rubble of existing:
            a) Chimney (corbelling).
            b) Cone.

c) Walls.
d) Benches.
e) Inverts.

E. Prepare manhole to receive lining system:
1. As necessary.
2. Reshape and repair:
a. Where required:
1) Benches.
2) Inverts.
3) Ceilings.
4) Walls.
b. Including:
1) Smoothing out irregularly-shaped:
a) Corbels.
b) Chimneys.
c. Prior to coating application.
3. Apply patch material:
a. To invert and bench
1) Do not compromise grade of invert.
b. Minimum thickness: ½ inch.
c. Extend sufficiently to wall:
1) To tie into liner to be applied later.
4. Coat monolithically:
a. All:
1) Ceilings.
2) Walls.
3) Benches.
b. To manufacturer’s required thickness.
c. By spray-on methods.
5. Prepare all interior surfaces:
a. As recommended by manufacturer.
6. Minimum requirements:
a. Repair and fill all cracks and other voids:
1) With suitable non-shrinking:
a) Cements.
b) Sealants.
c) Grouts.
2) Including all voids between existing sewer pipes and manhole walls.

b. Make all patches:
    1) Smooth.
    2) Even within manhole wall.
c. Remove existing manhole rungs/steps.
    1) Fill voids.
d. Prepare all surfaces suitably:
    1) For approved coating's required bond.
    2) As recommended by manufacturer.
e. Allow invert and bench to cure:
    1) 30 minutes minimum.
    2) Before being subject to active flow.

3.3 INSTALLATION

A. Control sewage flows per Section 33 01 33.

B. Ensure proper preparation and installation conditions:
    1. Including:
        a. Temperature.
        b. Moisture.
    2. Per ASTM F1869.
    3. Apply manhole lining immediately after initial inspection.
        a. Otherwise manhole may need to be re-cleaned:
            1) Prior to lining application.
            2) To remove accumulated debris on:
                a) Benches.
                b) Walls.

C. Cementitious Liner:
    1. First Application:
        a. Surface condition prior to spraying:
            1) Damp.
            2) Without noticeable free water.
            3) Totally saturated.
        b. Spray-apply materials:
            1) From bottom of wall to top.
            2) To a minimum uniform thickness to ensure that:
                a) All cracks, crevices, and voids are filled.
                b) A relatively smooth surface remains after light trowelling.
        c. Perform light trowelling to:
            1) Compact material into voids.

2) Set the bond.

2. Second Application:
   a. Apply after first application has begun to take an initial set:
      1) Disappearance of surface sheen:
         a) 15 minutes to 1 hour depending on ambient conditions.
   b. Assure a minimum total finished thickness of 1 inch.
   c. Again apply from bottom up.
   d. Then trowel surface:
      1) To a smooth finish.
      2) Being careful not to over-trowel:
         a) So as to bring additional water to surface and weaken it.
3. Curing:
   a. Minimize applied product's exposure to:
      1) Sunlight.
      2) Air movement.
   b. Set manhole cover back in place if:
      1) Second application will begin more than 15 minutes after completing first application.
      2) Finished product will be exposed to sunlight or air movement for more than 15 minutes at any time.
   c. Allow final application to cure:
      1) Before being subjected to active flow.
      2) Minimum cure time: 4 hours.
   d. Do not allow traffic over manholes:
      1) Minimum 12 hours.
      2) After application is complete.
4. Minimum finished thickness: 1 inch.
   a. All surfaces.

D. Provide complete watertight seal.
   1. At connections:
      a. Pipe.
      b. Manhole wall.
   2. Submit details of how watertight connections will be made:
      a. To OWASA's Engineer.
      b. For review and approval.

E. Do not install manhole lining until:
   1. All other manhole rehabilitation preparation is complete.

F. In manholes containing lines to be abandoned:

1. Plug abandoned line with:
    a. Brick.
    b. Grout.
2. Patch material:
    a. Minimum thickness: 6 inch.

G. Raising Manhole:

1. Remove frame from cone.
2. Clean top of cone and bottom of frame:
    a. To new surface.
3. Insert precast grade ring to raise the manhole with ample butyl rubber mastic applied between the cone and grade ring and the grade ring and the frame.
    a. If multiple grade rings are required, butyl rubber mastic shall be inserted between each joint.
4. If adjustment is made between the barrel and the cone section, butyl rubber shall be inserted between each joint.

H. Realign and Reset Frame:

1. Frame bolts:
    a. Minimum: 2
    b. Diameter: 5/8 inch
    c. Length: 4 inch
2. Frame:
    a. Sealed to top of manhole with butyl rubber mastic.
    b. Manholes not in pavement:
        1) Bolt frames to cone section using hot dipped galvanized lag bolts and washers with lagshields (“redheads”).
3. Then place Grout:
    a. Height of the adjustment.
    b. Inside.
    c. Outside.

I. Frame/Chimney Seal Installation:

1. Applied Seal:
    a. Remove from area to be coated:
        1) All:
            a) Foreign material.
            b) Bituminous coating.
            c) Rust or scale build-up.
            d) Etc.
        2) By sandblasting.
        3) Per manufacturer’s requirements.

b. Dry area completely:
    1) After cleaning.
    2) Before applying seal material.
c. Then apply urethane resin compound:
    1) From bottom 3 inches of frame.
    2) To top 3 inches of cone.
        a) Including grade adjustment area.
    3) Minimum thickness: 120 mils.
d. Apply per manufacturer's written instructions.

J. Cured-in-Place Liners:

1. Custom fabricate liner to individual manhole dimensions.
2. Line bench and channel area with compatible epoxy or resin material placed in bottom of manhole.
    a. Extend minimum 6 inches up manhole wall.
3. Remove manhole steps.
4. Saturate liner with resin, place in manhole, pressurize with air or water and cure with hot water, steam, or hot air.
5. Finish liner.
6. Finished liner:
    a. Forms monolithic structure from manhole frame to bench.

3.4 FIELD QUALITY CONTROL

A. Inspect the work:

1. After rehabilitation and repair has been completed:
    a. Visually.
    b. In OWASA's Engineer's presence.
    c. For compliance with:
        1) These specifications.
        2) Manufacturer's recommendations.
2. During warranty period.
    a. OWASA's Engineer will inspect.
3. Correct:
    a. Any:
        1) Infiltration.
        2) Defects in work.
    b. At no additional cost to OWASA.

B. Vacuum test manholes:

1. That are completely rehabilitated using cementitious liner.
2. Prior to final acceptance.

3. No earlier than 72 hours after liner application.
4. Procedure:
    a. Draw a vacuum of 10 inches of mercury.
    b. Shut off vacuum pump.
    c. With valves closed:
        1) Measure time it takes vacuum to drop to 9 inches of mercury.
        2) Manhole passes test if time is greater than values shown below:

MANHOLE DEPTH	MANHOLE DIAMETER		
	48 IN	60 IN	72 IN
Less than 10 Ft	60 sec	75 sec	90 sec
10 ft – 15 ft	75 sec	90 sec	105 sec
15 ft – 20 ft	90 sec	105 sec	120 sec

5. If manhole fails initial test:
    a. Make necessary repairs with an approved non-shrink grout.
    b. Re-test until manhole passes.
6. Perform all tests in presence of:
    a. OWASA's Engineer.
7. Furnish everything necessary to conduct testing:
    a. Personnel.
    b. Facilities.
    c. Equipment.

C. Manhole Lining:
1. Test for continuity per:
    a. ASTM D4787.
    b. Approved submittals.
2. Test spray-on liners for:
    a. Holidays.
    b. Gauge depth.
3. Photograph manholes.
4. Conduct pull test with embedded bolt or tab.
5. Repair holes and discontinuities per manufacturer's recommendations.

D. During material application:
1. Maintain daily record of:
    a. Substrate temperature.
    b. Substrate moisture content.
    c. Ambient air temperature.
    d. Humidity.
    e. Wind conditions.

2. Daily record shall be:
    a. Authenticated by manufacturer's authorized representative.
    b. Accessible to OWASA's Engineer anytime during normal project working hours.
3. Provide certified copy of daily record:
    a. To OWASA's Engineer.
    b. As part of project close-out documents.

E. Defective work:

1. Coating will be considered defective if any of the following conditions exist in final product:
    a. Dry film thickness not met.
    b. Debris embedded in:
        1) Primer,
        2) Coating material.
    c. Loss of adhesion.
    d. Discoloration.
    e. Surface exhibits any defect identified in application section.
2. Repair all defective primer or coating:
    a. Per manufacturer's recommendations.
    b. At no additional cost to OWASA.

END OF SECTION

SECTION 33 05 16
PRECAST CONCRETE UTILITY STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Precast concrete vaults, manholes, wetwells, pump stations, and appurtenant items.
2. Leak testing completed structures that handle fluids.

B. Related Sections include but are not necessarily limited to:

1. Division 00.
2. Division 01.
3. Section 31 23 33.

1.2 QUALITY ASSURANCE

A. Referenced Standards:

1. American Association of State Highway and Transportation Officials (AASHTO):
   a. Standard Specifications for Highway Bridges.
2. American Society for Testing and Materials (ASTM):
   a. A615, Standard Specifications for Reinforcing Steel.
   b. C150, Standard Specification for Portland Cement.
   c. C443, Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
   d. C478, Precast Reinforced Concrete Manhole Sections.
   e. C923, Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes.
   f. C890, Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures.
   g. C990, Standard Specification for Joint of Concrete Pipes, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
3. Building Code: 2018 North Carolina Building Code (2015 International Building Code with North Carolina Amendments).
4. Occupational, Health and Safety Administration (OSHA).
   a. Standards 1926.74 Requirements for Precast Concrete.
5. North Carolina Department of Environment and Natural Resources (NCDENR)
   a. Minimum Design Criteria for the Permitting of Pump Stations of Force Mains, adopted by the Division of Water Quality, June 1, 2000.
6. American Society of Civil Engineers (ASCE)
   a. 7-16: Minimum Design Loads and Associated Criteria for Buildings and Other Structures.

B. Qualifications

1. Product Supplier:
    a. At least 10 years successful experience in design and construction of precast concrete utility structures.
2. Professional Engineer in charge of design:
    a. Licensed to practice engineering in the State of North Carolina.

1.3 SUBMITTALS

A. Shop Drawings:

1. See Section 01 33 00.
2. Product technical data including:
    a. Acknowledgement that products submitted meet requirements of standards referenced.
    b. Manufacturer's installation instructions.
3. Drawings and Calculations:
    a. Include detailed plan and section drawing showing typical components and dimensions for each structure, if requested by OWASA's Engineer.
    b. Itemize, on separate schedule, sectional breakdown of each structure with all components and refer to drawing identification number or notation.
    c. Indicate knockout elevations for all piping entering each structure.
    d. Buoyancy/uplift and stability calculations per Building Code and pertinent state requirements.
    e. Signed and sealed by a Professional Engineer registered in North Carolina.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Precast utility structures:
    a. Tindall.
    b. Rinker/Hydro Conduit Division.
    c. Old Castle Precast, Inc.
2. Manhole ring and cover:
    a. East Jordan Iron Works, Inc.
        1) Product No. 41385072
    b. U.S. Foundry & Manufacturing Corp.
        1) Ring: Part No. 669-2WS
        2) Cover: Part No. KL-2WS
3. Black mastic joint compound:
    a. Kalktite 340.
    b. Tufflex.

c. Plastico.

4. Premolded joint compound:
   a. Ram Nec.
   b. Kent Seal.
5. Fibered asphalt compound:
   a. Sonneborn Hydrocide 700B Semi-Mastic.
6. External Seal Wrap:
   a. Infi-Shield (Sealing Systems, Inc.).
7. Manholes on sanitary sewer lines 12-inch or larger shall have an antimicrobial admixture.
   a. Antimicrobial Admixture: 1 gallon per cubic yard of concrete of ConmicShield® by Conshield Technolofies Inc. Additive shall be included in the concrete mix designas part of the total water content. The additive shall be added to the concrete mix water to ensure even distribution throughout the concrete mixture.
8. Flexible Manhole Connectors:
   a. Press-Seal Gasket Corporation.
   b. Hamilton Kent.
   c. NPC Inc.
   d. Or approved equal.

B. No like, equivalent or "or-equal" item or substitution is permitted.

C. Submit request for substitutions in accordance with Section 01 25 00.

2.2 UTILITY STRUCTURE COMPONENTS

A. All completed structures shall be capable of withstanding HS-20 loading, unless otherwise noted.

B. Components:
1. Precast concrete: See herein.
2. Reinforcement: ASTM C478 or A615 grade 60.
3. Minimum wall thickness as determined by precaster, unless otherwise specified.
4. Minimum base thickness: 12-inch for cast-in-place, 6-inch for precast.
   a. Verify flotation stability.
5. Provide the following components for each structure as required:
   a. Base (precast) with integral bottom section or (cast-in-place).
   b. Precast bottom and barrel section(s).
   c. Precast transition section and adjuster ring(s).
   d. Precast top.
   e. Pipe penetration seals.
   f. Access steps (see “Construction” below).
6. Diameter: Refer to Drawings.

C. Sanitary Sewer Structure:

1. Provide all sanitary manholes constructed with Portland ASTM C150, Type I /II cement with a tricalcium aluminate content not to exceed 8 percent.
2. Mix aggregate shall be a minimum of 50 percent crushed limestone.
3. Provide 3000 psi non-shrink grout.
4. Equip with liner or coating as specified.

D. Ring and Cover:

1. Cast iron, ASTM A48, Class 35B.
2. Support H-20 wheel load.
3. Conform to shape and dimensions on OWASA standard details.
4. Free from holes, cracks, or other defects.
5. Machined seats so cover will not rattle.
6. Minimum weight:
    a. Ring: 190 pounds.
    b. Cover: 120 pounds.
7. Manufacturer name and part number cast permanently on ring and cover.

E. Pressure Type Ring and Cover:

1. Provide covers meeting the requirements of Paragraph 2.2B and as modified below.
2. Furnish ring and bolted cover of heavy-duty construction.
    a. Equip unit with six (6) stainless steel countersunk 3/8 inch diameter by 1-1/2 inch long bolts with stainless steel washers.
3. Provide solid lid and minimum 1/8 inch thick x ½ inch wide continuous strip neoprene gasket.
4. Furnish unit with a minimum of six (6) anchorage holes and six (6) 6 inch long x ¾ inch diameter Type 316 stainless steel anchor bolts or equivalent.

F. Access Doors: See drawings.

G. Manhole Steps:

1. Conform to:
    a. Current OSHA standards.
    b. ASTM C478.
2. General:
    a. Provide maximum distance from surface to first rung is not greater than 16 inch and that maximum spacing on remaining steps is 16 inch OC.
    b. Safety tread.
3. Extruded aluminum:
    a. Minimum step width: 14 inch.
    b. Distance from face of wall to center of tread: 7 inch.
    c. Embedment: 3 inch.
    d. Minimum cross section: 0.875 inch.

4. Copolymer polypropylene encapsulated 1/2 inch Grade 60 Steel Rod as manufactured by MA Industries, Inc., Peachtree City, GA.
    a. Minimum step width: 12 inch.
    b. Distance from face of wall to back of tread: 5-3/4 inch.
    c. Embedment: 3-3/8 inch.
    d. Encapsulating Material Thickness: Equal to MA Industries, Inc.

H. Joint Treatment:

1. All joints of precast sections shall contain one of the following unless shown otherwise on Drawings:
    a. Resilient O-Ring Gaskets: ASTM C443 for sanitary sewer structures.
    b. Butyl Rubber Flexible Joint Sealants: ASTM C990 for storm sewer structures.
2. Install an external seal wrap on all buried joints of precast sections.
    a. Resilient O-ring gaskets manufactured from natural or synthetic materials complying with ASTM C923, of suitable cross section and size to meet specified infiltration or exfiltration requirements.
    b. Interior coating to be in place prior to setting of manhole section.

I. Pipe to Manhole Connection:

1. Flexible manhole connector.
    a. Conform to ASTM C923 for sanitary sewer structures.
2. Provide cementitious grout for storm sewer structures.

PART 3 - EXECUTION

3.1 DESIGN

A. Design all precast structures to resist all loadings required by the Building Code and the Contract Documents for the Project application, including but not limited to soil, surcharge, hydrostatic, vertical live load, and seismic forces, as applicable.

B. Buoyancy Uplift:

1. Supplier to design vaults/manholes to resist flotation. Provide calculations with shop drawing submittal.
2. For flotation calculation, use top of manhole/vault structure as groundwater elevation, unless otherwise noted.
3. Factor safety against flotation shall be in compliance with NCDENR Water Quality Division regulations and ASCE 7-16, whichever is more stringent. Provide a minimum safety factor of 1.25.

C. Structural Loading:

1. Utility buried structures constructed in paved areas shall be designed to support AASHTO HS-20 loadings. Reference ASTM C890 for loading information.
2. Utility buried structures constructed in unpaved areas shall be designed to support a minimum uniform live load of 100 pounds per square foot (PSF), unless otherwise noted.
3. See Contract Drawings for additional loading requirements, as applicable.

3.2 CONSTRUCTION

A. General:

1. Set precast concrete base sections on a firm, stabilized foundation and 6-inch of washed stone so prepared to prevent settlement and misalignment.
2. Precast manhole bases shall have smooth, semi-circular inverts conforming to the inside contour of the adjacent sewer sections.
3. For changes in direction of the pipe and entering branches into the structure, make a circular curve in the invert using as large a radius as structure inside diameter will permit. Pour base slab integral with bottom barrel section.
4. Utilize precast concrete base with integral bottom section.
5. Ensure accurate vertical placement and leveling prior to placement of interior grout. Provide vertical alignment tolerance of maximum 1 inch horizontal to 10 feet vertical.
6. Make inverts with a semi-circular bottom conforming to the inside contour of the adjacent sewer sections. Shape inverts accurately and give them a steel trowel finish. For changes in direction of the sewer and entering branches into the manhole, make a circular curve in the manhole invert of as large a radius as manhole size will permit. Establish benches per OWASA standards.

B. Build each structure to dimensions shown on Drawings and at such elevation that pipe sections built into wall will be true extensions of line of pipe.

C. For all horizontal mating surfaces between concrete to concrete and concrete to metal, install resilient O-ring type gaskets.

D. For horizontal joints, install a resilient O-ring type gasket or pre-molded joint compound, per OWASA standards.

E. If PVC pipe is specified, pipe manufacturer shall install resilient O-ring gaskets centered in wall of manhole, per OWASA standards.

F. Seal all pipe penetrations in structure. Pipe openings shall be placed at the exact elevations and locations to receive pipes. Form pipe openings smooth and well shaped.

G. Sections shall be installed level and plumb, such that access rungs/steps are in alignment.

H. Set and adjust frame and cover final to match finished pavement, or finished grade elevation, or elevation indicated on Drawings.

I. Access Steps: The manufacturer of the precast structures shall furnish and install in riser sections steps which comply with the latest amendment of the Occupational Safety and Health Act and shall conform to RR-F-621. The step shall also be totally resistant to corrosion by hydrogen sulfide and other sewer gasses which may cause ordinary steps to fail.

J. Install protective coating or lining where indicated on the Drawings.

K. Bolt frames to concrete sections with anchor bolts where indicated on Drawings or in OWASA standards.

3.3 INSTALLATION

A. Install on a 6-inch (unless otherwise noted) level subbase of #57 stone.

B. Install plumb and to grade for connecting pipes.

C. Place concrete in exterior annular excavated space (as required by Drawings).

3.4 FIELD QUALITY CONTROL

A. Leak test all fluid handling structures.

B. Vacuum test manholes per Section 40 05 00.

C. Test protective lining per manufacturer's recommendations.

END OF SECTION

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SECTION 33 05 31
POINT REPAIRS OF GRAVITY SEWERS

PART 1 - GENERAL

1.1 SUMMARY

A. This section gives the requirements for point repair of sanitary sewers. Point repairs typically refer to repairs made at a specific location and involving a relatively short section of pipe. Minimum repair length shall be as designated on the drawings.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00
2. Division 01
3. Section 33 01 16
4. Section 33 01 32

PART 2 - PRODUCTS

2.1 MATERIALS

A. PVC:

1. See section 40 05 31.
2. PVC shall only be used if repair is being made in a section that will be rehabilitated using CIPP or pipe bursting.
3. PVC shall be used if repair is on an existing 6-inch diameter pipe.

B. Ductile Iron Pipe:

1. See section 40 05 19.
2. DIP shall be used everywhere PVC is not allowed.

PART 3 - EXECUTION

3.1 SEWER BYPASSING

A. The Contractor shall meet the requirements for bypassing and flow control in Section 33 01 33.

3.2 INTERNAL INSPECTION

A. The interior of the sewer shall be carefully inspected in accordance with Section 33 01 16.

3.3 EXCAVATION

A. The contractor shall perform all work in accordance with Section 31 23 33.

3.4 REPAIR

A. The Contractor shall, after consulting with OWASA's Engineer, remove the section of defective pipe or fitting by cutting on each side along lines perpendicular to the longitudinal axis of the pipe so as to leave "spigot ends" to be connected to replacement pipe. Replacement sections of pipe shall be cut to the exact length needed to make the repair.

B. Connections shall be made using transition couplings.

1. For temporary repairs made in advance of CIPP or pipe bursting, use Fernco flexible coupling, or equal.
2. For permanent repairs, use Fernco flexible coupling with stainless steel shear ring, or equal.

C. Stone bedding and backfill shall be placed and compacted per Section 31 23 33.

3.5 ACCEPTANCE

A. Inspect all repairs per Section 33 01 16.

B. All unacceptable sections shall be removed or repaired at the Contractor's expense by a method approved by OWASA's Engineer.

END OF SECTION

SECTION 33 31 00

SANITARY SEWER PIPE INSTALLATION BY PIPE BURSTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Installation of new sanitary sewer pipe to replace an existing pipe of the same or larger diameter by pipe bursting method. Furnish all labor, materials, equipment, and incidentals required to install and test the new sewer pipe and appurtenances, connect new pipe to existing manholes, modify existing manholes bases as needed, reconnect existing sewer lateral connections, perform pre- and post-rehabilitation television inspection, and other work as shown on the Drawings and as specified herein.

B. Related Sections include but are not necessarily limited to:

1. Division 0
2. Division 1
3. Section 31 23 33
4. Section 33 01 16
5. Section 33 01 32
6. Section 33 01 33
7. Section 40 05 33

1.2 QUALITY ASSURANCE

A. Contractor shall comply with all applicable laws, regulations, ordinances, and with the requirements of the applicable highway or street department, or other utilities that will be crossed.

B. The Contractor shall be certified by the Pipe Bursting System Manufacturer that such a company is fully trained user of the pipe bursting system. Contractor shall have a minimum of three years experience and shall have completed on a minimum of three projects using their proposed pipe bursting system for construction of sewer pipelines with a minimum diameter of 8 inches and a combined total of 3,000 feet or more installed. Pipe bursting shall be performed by personnel trained in the use of the pipe bursting equipment.

1. Personnel directly involved with operating the pipe bursting system shall have received training in the proper methods for operating the equipment and shall be certified for its use.
2. Training and certification shall be performed by qualified representatives of the Pipe Bursting System Manufacturer.

C. Pipe bursting operations shall be performed under the constant full time direction of a single pipe bursting superintendent and/or supervisor who shall have pipe burst or supervised pipe bursting of a minimum of 3,000 linear feet of gravity flow pipe of 8-inch through 24-inch diameter. The on-site superintendent and/or supervisor shall not be removed or replaced from the project without written permission from OWASA's Engineer. The replacement person shall also meet the required qualifications.

D. Contractor or their designated subcontractor shall have satisfactory qualifications, certifications and experience in the use of the proposed CCTV inspection equipment for use in the pre-construction and post-construction inspection of existing and new sewers.

E. Pipe jointing shall be performed by personnel trained and certified in the use of butt-fusion equipment and recommended methods for new pipe and sewer service connections.

1. Personnel directly involved with installing the new pipe shall have received training in the proper methods for handling and installing the pipe and shall be certified for fusing and installing the sewer main, sewer service lines and main connections.

2. Training and certification shall be performed by qualified representatives of the fusion equipment and pipe manufacturer.

1.3 DEFINITIONS

A. Pipe Bursting shall be defined as replacement of existing pipe by using a method that demolishes the existing pipe in place while simultaneously installing a new pipe at the location where the old pipe existed, reconnecting existing sewer service connections, CCTV inspections, testing, and all other work required for a complete and functional installation.

B. Host Conduit is defined as the existing sewer pipeline to be replaced by bursting.

C. Replacement Pipe is defined as the new inserted pipe to be installed behind the pipe bursting tool/head in order to replace the host conduit.

D. Pipe bursting shall use the Pneumatic Internal Pipe Expansion Method, Static Internal Pipe Expansion Method, or the Pipe Reaming Method at the Contractor's choice.

1. Pipe Bursting by Pneumatic Internal Pipe Expansion Method shall be defined as replacement of existing pipe by using a pneumatic hammer actuated pipe bursting unit winched through the existing sewer pipe that splits the existing sewer pipe while simultaneously installing a new pipe of equal or larger diameter where the old pipe existed.
2. Pipe Bursting by Static Internal Pipe Expansion Method shall be defined as replacement of existing pipe by using a static bursting machine to pull a bursting head and expander through the existing sewer pipe that splits the existing sewer pipe while simultaneously installing a new pipe of equal or larger diameter where the old pipe existed.
3. Pipe Bursting by Pipe Reaming Method shall be defined as replacement of existing pipe by using a horizontal directional drilling rig to pull an appropriately sized reamer through the existing pipe to grind and pulverize the existing pipe, flush the pulverized pipe material and drilling fluid through the existing pipe to a retrieval point, while simultaneously installing a new pipe of equal or larger diameter (connected via a swivel to the reaming head), into the location where the old pipe existed.

E. The most appropriate pipe bursting method for the project shall be determined by the Contractor and coordinated with the pipe bursting equipment suppliers.

1.4 SUBMITTALS

A. Shop Drawings:

1. See Section 01 33 00.
2. Submit to OWASA's Engineer the detailed procedures for construction methods of installing the pipe, including a detail of the proposed pipe-to-manhole connection method.
3. Submit to OWASA's Engineer, prior to the start of work, a drawing and layout plans showing the size and location of all proposed pits and excavations required to complete the work. All access pits must be within the easement limits defined on the Drawings. It is assumed that excavations will occur primarily at or near existing manhole locations.
4. Product technical data including:
    a. Acknowledgement that products submitted meet requirements of standards referenced.
    b. The name of the equipment manufacturer and supplier for this work.
    c. Catalog data, and manufacturer's technical data showing complete information on material composition, physical properties, and dimensions of new pipe and fittings, and bursting head.
    d. Data on carrier pipe materials, casing spacers and accessories.

B. Submit pipe bursting work plan with complete Drawings and written description identifying details of the proposed method of construction and the sequence of operations to be performed during construction, and method of reconnection of existing connections, by-pass pumping procedures as required.

C. A frac-out monitoring and response plan shall be provided for use with the Pipe Reaming Method including:

1. Provision of adequate site-specific resources available for immediate response.
2. Monitoring protocols
3. Containment and clean-up plan including staging location of vacuum trucks and equipment and list of equipment.
4. Traffic control provisions to prevent frac-out impacts to traffic.

D. Contractor's Qualifications and Experience:

1. Qualifications and experience of pipe bursting Contractor on previous projects and of key on-site personnel as described.
2. Qualifications of pipe bursting Contractor and Contractor's personnel as required in this Specification
3. Qualifications of personnel trained in the use of butt-fusion equipment and training in the proper methods for handling and installing the HDPE pipe.
4. Qualifications and experience of Contractor or designated subcontractor in the use of the CCTV inspection system proposed for use for pre-construction and post-construction CCTV inspections of existing and new sewers.
5. Certification of on-site personnel for operation of the pipe bursting system and for welding and installing of HDPE pipe.
6. Copies of field tests for exfiltration of new sewer pipe.

E. Detailed Construction sequence and schedule.

F. Prior to start of work submit bypass pumping details and calculations.

G. Prior to start of work submit a project specific quality assurance/quality control (QA/QC) plan.

H. Prior to start of work submit a project specific Safety Plan.

I. Prior to start of work submit a project specific Contingency Plan that accounts for obstructions, heave and/or settlement, damage to laterals and other utilities, loss of line and grade, and loss of bursting head.

J. A copy of television inspection reports before and after installation of new pipe.

K. Tests:

1. Tests for compliance with this specification shall be made as specified herein and in accordance with the applicable ASTM Specification.
    a. A certificate of compliance shall be furnished by the manufacturer for all material furnished under this specification.
    b. Polyethylene plastic pipe and fittings may be rejected to meet any requirements of Specifications.

L. Method of controlling line and grade of augering operation.

M. Method of spoil and slurry removal, including surface storage and disposal.

N. Casing pipe fabrication drawings, including joint details.

1. Details of the pipe and casing installation.

O. Grouting techniques to be used for filling annular void between casing and carrier pipe, where required, and for filling over excavation, if any, including equipment, pumping and injection procedures, pressure grout types, and mixtures.

1.5 WARRANTY

A. The Contractor shall warrant to OWASA that the equipment used on this Contract, where covered by patents or license agreements, is furnished in accordance with such agreements and that the prices included herein cover all applicable royalties and fees in accordance with

such license agreements. The Contractor shall defend, indemnify and hold OWASA and OWASA's Engineer harmless from and against any and all costs, loss, damage, or expense arising out of or in any way connected with any claim of infringement of patent, trademark, or violation of license agreement.

B. All pipe bursting work shall be fully guaranteed for a period of one year from the date of acceptance. During this period, all serious defects discovered by OWASA's Engineer shall be removed and replaced in a satisfactory manner at no cost to OWASA. Following delivery of the final television inspection provided by the Contractor, OWASA may conduct an independent television inspection, at his own expense, of the new sewer pipe prior to the completion of the one year guarantee period.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site as required, and as recommended by the manufacturer.

B. Store and protect products as required to prevent damage, and as recommended by the manufacturer.

C. If new pipe and fittings become damaged before or during installation, it shall be repaired as recommended by the manufacturer or replaced as required by OWASA's Engineer at the Contractor's expense before proceeding further.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Sewer Pipe: HDPE Sewer pipe as specified in Section 40 05 33.

B. Use pipe that is round with a smooth, even outer surface, and has joints that allow for easy connections between pipes. Pipe ends shall be designed so that bursting loads are evenly distributed around the entire pipe joint, and such that point loads will not occur when the pipe is installed. Pipe used for pipe bursting shall be capable of withstanding all forces that will be imposed by the process of installation, as well as the final in place loading conditions. Protect the driving ends of the pipe and joints against damage.

C. Pipe Bursting Equipment: The Pipe Bursting Contractor shall confirm proper selection of pipe bursting equipment which, based on past experience, has proven to be satisfactory for pipe bursting the existing pipe, while maintaining accurate line and grade control. Equipment shall generally include a full bodied tool with rear expander, and constant tension winch or other method of monitoring correct cable tension.

1. Pneumatic Internal Pipe Expansion Method
    a. Pipe Bursting Tool/unit:
        1) Sized accordingly to plans and conditions without being oversized, to force its way through the existing pipe materials by fragmenting the pipe and compressing the old pipe sections into the surrounding soil as it progresses. At the same time expanding the ground and creating a void into which the bursting head can be winched and to enable forward progress to be made.
        2) The pipe bursting tool shall be pulled through the sewer by a winch located at either the upstream or downstream manhole.
        3) Attached to the new pipe being installed, and pull the new pipe with the bursting unit as it moves forward.
        4) The bursting head shall incorporate a shield/expander to prevent collapse of the hole ahead of the pipe insertion.
        5) The bursting unit shall be remotely controlled.
        6) The bursting unit shall have its own forward momentum while being assisted by a winch with constant tension.
        7) The pipe bursting equipment shall include a bentonite or polymer slurry lubrication system in accordance with the pipe bursting equipment manufacturer's

recommendations, to reduce friction developed on the surface of the replacement pipe during insertion.

b. Winch Unit:
   1) The winch shall be attached to the front of the bursting unit, connecting to or through the advanced guide head.
   2) Hydraulically operated with twin drive motors and gear boxes for independent operation.
   3) The winch shall be fitted with a direct reading load gage to measure the winching load.
   4) Shall have constant tension pulling the bursting unit forward.
   5) Shall have sufficient cable in one continuous length so that the pull may be continuous between winching points.
   6) Braced accordingly and safely to prevent injury and property damage.

2. Static Internal Pipe Expansion Method
   a. Pipe Bursting Tool/unit
      1) Sized accordingly to plans and conditions without being oversized, to force its way through the existing pipe materials by fragmenting the pipe and compressing the old pipe sections into the surrounding soils as it progresses. At the same time expanding the ground and creating a void into which the bursting head can be pulled and to enable forward progress to be made.
      2) Bursting rods shall be pushed from a receiving pit through the existing sewer pipe to a launching pit where the bursting appurtenances and new pipe are connected and pulled back through the existing pipe.
      3) The pipe bursting tool shall be pulled through the sewer by a hydraulically operated static pipe bursting unit.
      4) The bursting head shall incorporate a shield/expander to prevent collapse of the hole ahead of the pipe insertion.
      5) The bursting unit shall be remotely controlled.
      6) The pipe bursting equipment shall include a bentonite or polymer slurry lubrication system in accordance with the pipe bursting equipment manufacturer's recommendations, to reduce friction developed on the surface of the replacement pipe during insertion.
      7) The static pulling frame shall be telescopic in design to allow the bursting head to release at the termination of the pull.

3. Pipe Reaming Method
   a. Pipe Reaming Unit:
      1) Shall be a horizontal directional drilling (HDD) rig.
      2) Sized accordingly to plans and conditions without being oversized, to grind and pulverize the existing pipe materials using an oversized grinding head pulled by the HDD rig while simultaneously pulling the new HDPE sewer pipe into place. A swivel shall be used between the grinding head and the new HDPE sewer pipe.
      3) The pulverized pipe material and drilling fluids shall be flushed through the existing pipe to a retrieval point and removed.
      4) The pipe reamer shall be sized sufficiently to provide adequate overcut for installation of the new sewer pipe, but shall not exceed the maximum diameter of the new sewer pipe by more than three inches.
   b. Drilling fluids shall be a mixture of water and bentonite, with mixture proportions selected by the Contractor to ensure hole stability, transport pulverized pipe materials to the retrieval point, reduce drag on the pipe, and completely fill the annular space outside of the new sewer pipe to prevent settlement. Drilling fluids and slurries shall be transported and disposed of in accordance with all applicable local, state, and federal regulations.

c. Drill rods/stem shall be high quality drill rods that have been inspected and determined to be adequate for the project requirements.

d. Pipe swivels shall be used between the reamer and the new sewer pipe to prevent rotation of the sewer pipe during installation. Pipe swivels shall be heavy-duty units of adequate capacity and in good condition.

PART 3 - EXECUTION

3.1 PROTECTION AND SAFETY

A. The Contractor shall be responsible for means and methods for pipe bursting operations, and shall ensure the safety of the work, the Contractor's employees, the public, and adjacent property, whether public or private.

B. The Contractor shall perform construction operations in such a manner that will not interfere with the operation of street, affect underground installations and utilities, or weaken or damage any structure.

C. The Contractor shall repair to its original condition any paving or underground utility disturbed by the Pipe Bursting Process. Contractor shall satisfactorily remedy and restore all construction impacts or damage to existing site and facilities.

3.2 WORK PRIOR TO PIPE INSTALLATION

A. The Contractor shall clean the host conduit prior to commencing pipe bursting operations. The cleaning shall be to the extent necessary to conduct pipe bursting operations and to televise and identify potential obstructions or other concerns. It is the Contractor's responsibility to assure that the host conduit is sufficiently clean so as not to prohibit proper pipe bursting operations. No additional compensation will be made if the conduit is not sufficiently cleaned.

B. The Contractor shall initially CCTV test all lines to be pipe-burst prior to installation, to identify all service locations that are connected to the section of pipe being pipe-burst.

1. Coordinate with service owner prior to installation.
2. The TV inspection of the existing pipeline shall be performed by experienced personnel trained in locating breaks, obstacles and service connections by closed circuit color television.
3. Contractor shall coordinate with Owner to ensure that all service connections required to be connected to the new sewer are identified and reconnected after pipe bursting.

C. Contractor shall notify all local residents and businesses that abut the project site that construction will take place. Contractor shall notify each resident at least 48 hours in advance of commencement of the pipe bursting operations, giving the date, start time and time when work is expected to be completed. The Contractor shall also provide a telephone number which property owners can call for information during the work. A second notice shall be provided to each resident the morning of the scheduled start of pipe bursting operations by knocking on their doors.

D. Contractor shall be responsible for continuity of sanitary sewer service to each facility connected to the section of sewer main during the execution of the work, and shall also bypass the main sewer flow around the pipe to be replaced, or into adjacent sanitary sewers, if available. The pumps and the bypass lines, and backup pumps and lines, shall be of adequate capacity and size to handle all flows without sewage backup to public and private property. If sewage backup occurs and enter buildings, the contractor shall be fully responsible for clean-up, repair, property damage costs and claims.

E. If pre-installation video (CCTV) inspection reveals an obstruction in the existing sewer (heavy solids, dropped joints, protruding service laterals, protruding utility lines, or collapsed pipe) which will prevent the completion of the pipe bursting process, and that cannot be removed by conventional sewer cleaning equipment, an obstruction removal shall be made by the Contractor with the approval of OWASA's Engineer. Obstruction removal shall be done by pipe replacement, digging an obstruction elimination pit and bringing the bottom of the pipe trench to

a uniform grade in line with the existing pipe invert, or by other measures as approved by OWASA's Engineer.

F. Point repairs or obstruction removals shall be performed by the Contractor where CCTV inspections reveal heavy solids, dropped joints, sags in lines, or collapsed pipe that cannot be removed by conventional sewer cleaning equipment and prevent completion of the pipe bursting process. Point repairs shall be performed in accordance with applicable sections of these Specifications.

G. If pre-installation video (CCTV) inspection reveals a sag in the existing sewer that is greater than one-quarter the diameter of the existing pipe, it shall be the Contractor's responsibility to notify OWASA's Engineer of the sag and work with them to determine if a replacement pipe shall be installed in an acceptable grade without the sag prior to bursting.

H. Contractor shall identify, locate, excavate and expose each and all active customer service connections prior to rehabilitation or replacement of main sewer by dye testing, CCTV inspection, or other means, and completely disconnect all service connections that are active. The Contractor shall exercise due diligence in excavating the existing pipe sufficiently to allow for uniform circumferential expansion of the existing pipe through the service connection pit.

I. Identify, locate and expose all utilities that the pipe bursting procedures will cross. Adequately protect all utilities from damage. Potholed utility mains shall be fully exposed during pipe bursting to create a 6-inch minimum void space all around the crossing main. Void shall extend 1-foot on each side of pipe bursting. The Contractor is responsible for all costs resulting from damage to utilities during pipe bursting operations.

J. By-Pass Pumping:

1. The Contractor, when and where required, shall provide diversion pumping for the pipe bursting process.
2. The Contractor shall be responsible for continuity of sanitary sewer service to each facility connected to the section of sewer during the execution of work.
3. By-Pass pumping shall comply with OWASA's Manual of Specifications, Standards, and Design and the requirements of OWASA's Engineer.

K. Pipe layout and joining, see individual pipe specifications.

L. Remove inside fusion weld bead to provide smooth internal wall. Remove bead without scoring the inside wall.

M. Existing Manholes

1. Connections at existing manholes shall be enlarged before the bursting operation if the new pipe is planned to traverse through the manhole during bursting.
2. If the pipe bursting tool or machine and the replacement pipe is planned to transverse any existing manholes which are to remain in place (as shown on the Drawings) without interruption during the pipe bursting operation, conduit entrances and exits to the existing manholes shall be opened out to appropriate dimensions required and modifications made to the invert before the pipe bursting operation commences.

N. Concrete Encasements

1. Any concrete encasements shall be excavated and broken out prior to the bursting operation to allow the steady and free passage of the pipe bursting head.
2. All in-line valves and fittings shall be removed prior to the pipe bursting operation.
3. A water level or other means shall be provided to allow monitoring of the grade elevation of the auger casing.

O. Set casing to be jacked on guides, properly braced together, to support the section of casing and direct it to proper line and grade.

1. Place the whole jacking assembly so as to line up with the direction and grade of the casing pipe.
2. Jacking assembly and casing location shall be established and checked by surveying.

P. In unconsolidated soil formations, bentonite may be used to seal the overcut void outside the wall and furnish lubrication for the installation of casing.

1. The use of water to assist in lubrication to facilitate the removal of spoil is permitted, however, water jetting of the soil is not allowed when jacking the casing.

Q. Acceptance criteria for the carrier pipe when installed in casing shall be +2 inch in horizontal alignment from theoretical at any point between manholes, including the receiving end, and +1/2 inch in elevation from the theoretical.

1. If the carrier pipe cannot be installed in the casing within these tolerances, the Contractor may be required to realign the casing at no additional cost to OWASA, including any casing removal, backfill, or grouting of the abandoned hole.
2. Any redesign of the sewer and manholes made necessary by out of tolerance casing shall be at the Contractor's expense.
3. The installed carrier pipe must be capable of meeting the design flow and velocities for a full pipe condition.
4. The casing shall successfully pass a leakage integrity test if required.

R. Insofar as practical and depending on the character of the soil encountered during the augering operation, conduct operations without interruption to prevent the casing pipe from seizing up in the hole before the installation is complete.

S. The entire operation of augering and installation of casing and carrier pipes shall be acceptable to OWASA’s Engineer and the agency having jurisdiction.

1. Adequate means shall be provided to keep the work free from water.

T. There shall be no space between the earth and the outside of the casing.

1. All voids outside of the casing pipe shall be filled with bentonite (overcut only) or contact grout to the satisfaction of OWASA’s Engineer.
2. Sufficient care shall be exercised during grouting so as to prevent deflection or damage to the casing pipe or other facilities.

U. Repair casing damaged in augering operations by method acceptable to OWASA’s Engineer or remove and replace it.

3.3 LAUNCH AND RECEIVING PITS/EXCAVATIONS

A. Contractor shall identify the location, size, depth, layout, and ground support of all launching and receiving pits. Contractor shall locate and protect existing utilities as required during construction and/or as required by utility companies and/or OWASA’s Engineer.

B. Pipe installation sections shall be planned to maximize installation lengths and minimize the number of pits required. Insertion pits shall be located over existing manhole locations if possible, to minimize surface disturbance. Use of travel and parking areas for traffic shall be avoided if possible.

C. Maintain pits and work areas in a manner that will minimize adverse impacts. Maintain work pits and areas free from debris and unnecessary equipment and materials.

D. Excavation, trenching, dewatering, sheeting, shoring and bracing shall comply with all applicable OSHA, local and state standards and specifications. Pits shall be excavated in accordance with Section 31 23 33.

E. Contractor shall make sufficient provisions for the safety protection against traffic, and accidental or unauthorized entry in all applicable situations.

F. Contractor shall install sheeting, lining, shoring, and bracing required for the protection of the workmen and the public.

G. Excavations that have pull or push equipment installed shall have adequate support provided to prevent damage to adjacent areas.

3.4 INSTALLATION/CONSTRUCTION METHOD

A. Contractor shall limit the length of sanitary sewer pipe installed to the number of service connections that can be reconnected within a single 10 hour period.

1. Contractor shall notify OWASA's Engineer prior to service reconnections in order to allow OWASA representative to be onsite during reconnection activities.
2. All service connections shall be reconnected by the end of each work day.

B. Equipment used to perform the work shall be located away from buildings so as not to create noise impact. Sound emissions from the pipe bursting replacement process shall be limited to 80 decibels (dB) at 100-ft from the exhaust point of the pipe to be installed during the installation process. The Contractor shall measure noise and shall provide silencers or other devices to reduce equipment and work noise to meet these requirements.

1. Provide a silent engine compartment with the winch to reduce machine noise as required to meet local requirements for Internal Pipe Expansion Method.
2. Provide sound attenuation barriers for HDD rig to reduce machine noise.

C. The Contractor shall install all pulleys, rollers, bumpers, alignment control devices and other equipment required to protect existing manholes, and to protect the pipe from damage during installation.

1. Lubrication shall be used as recommended by the manufacturer.
2. Under no circumstances shall the pipe be stressed beyond its elastic limit.
3. Winch line shall be centered in pipe to be burst with adjustable boom.

D. Pipe Installation:

1. The installed pipe shall be allowed the manufacturer's recommended amount of time, but not less than 12 hours, for cooling and relaxation due to tensile stressing prior to any reconnection of service lines, sealing of the annulus or backfilling of any excavation pits.
2. In the event a section of pipe is damaged during the bursting operation, or joint failure occurs, as evidenced by inspection, visible groundwater inflow, or other observations, the Contractor shall submit to OWASA's Engineer for approval methods for repair or replacement of the pipe
3. Sufficient excess length of new pipe, but not less than 6 inches, shall be allowed to protrude into the manhole.
4. Restraint of pipe ends within manhole walls shall be achieved by means of electrofusion couplings at all manholes.
5. The electrofusion couplings shall be slipped over pipe ends against manhole wall and fused in place.
6. Installation of electrofusion couplings shall be done in accordance with the manufacturer's recommended procedure.
7. The installed pipe shall maintain a positive grade to facilitate sanitary sewer flow.

E. Sealing of Manhole to Pipe Connections:

1. Following the relaxation period, the annular space between the pipe and manhole may be sealed. Connections to manholes will not be made any earlier than 12-hours following the bursting operations. It is intended that this "relaxation period" will allow the pipe temperature to reach equilibrium with the surrounding soil and allow the pipe to release stresses imparted during bursting operations. Period shall be extended based on manufacturer's and/or supplier's recommendations.
2. Sealing shall be made with approved material and shall extend a minimum of 8 inches into manhole wall in such a manner as to form a smooth, uniform, watertight joint. Sealing shall include a flexible gasket connector attached to the pipe end and grouted in place.

F. Service Construction:

1. Excavations for laterals should be to a minimum depth equal to the pipe invert and shall not exceed a depth of 1 foot below the lateral.
2. Prevent uneven expansion of the soil by the bursting tool.
3. Avoid/prevent creating humps or sags in the new pipe or lateral connections.

G. Reconnection of Existing Services

1. After the replacement pipe has been completely installed and tested, all existing services as indicated on the Drawings and/or identified by the Contractor shall be reconnected to the replacement pipe.
2. All existing service laterals as indicated on the Drawings or identified by the Contractor shall be permanently reconnected after the liner has been pulled in place, but not before the pipe has been allowed to relax a minimum of 12 hours.
3. Service laterals/connections shall be reconnected to the new main line pipe by using connectors as specified in the plans and these specifications.
4. Connections to the existing service lateral pipe shall be made using flexible couplings that conform to ASTM C425, such as Max Adapters or equal. Joint deflection limits and lateral connections shall meet the maximums indicated in ASTM C12 and C425. The slope of the existing lateral toward the newly installed sewer main shall be maintained at the existing percent. For reconstructed laterals, a minimum slope of two percent (2%) is required.
5. Sewer house connections shall be attached to polyethylene replacement pipe by heat fusion saddles. Fusion saddles shall be as manufactured by Central Plastics, Phillips Driscopipe, Faction Fussion or equal. Once the saddle is secured in place, drill hole in pipe equal to the full inside diameter of the saddle outlet.
6. Before backfilling, the Contractor shall permit OWASA's Engineer and/or OWASA's representative to take elevations on both the existing and new portions of the service connection pipe to determine final grade and invert elevations. Elevation changes greater than 0.10 feet are unacceptable for the new house lateral piping and shall be reconnected as directed by the OWASA's Engineer.

3.5 MANHOLE REHABILITATION

A. Remove existing concrete manhole invert and wall section to accommodate pipe bursting procedure.

B. Seal manhole to new pipe connections with brick/grout/concrete and other sealing materials as required to achieve a watertight connection.

C. Anchor pipe ends within manhole walls by means of electrofusion couplings at all connections in all manholes.

D. Re-connect existing sanitary sewer pipe as indicated on the plans, seal and grout holes.

E. Reconstruct manhole invert to configuration required for new piping installation.

F. Replace/fill existing holes that may have taken place during the pipe bursting installation process, or existed beforehand. Repair all damage to manholes from pipe bursting construction.

G. If specified, perform additional manhole rehabilitation measures as required.

H. If damage caused by insertion process is deemed unrepairable by OWASA's Engineer, the Contractor shall replace the manhole at no cost to OWASA.

I. Apply 1/2 inch minimum total thickness of Strong-Seal MS-2C or equivalent to the entire interior.

J. Trowel finish surface of sprayed liner for a smooth surface.

K. Allow cure time per manufacturer's recommendations or minimum of 12 hours.

3.6 TESTING AFTER PIPE INSTALLATION

A. Low Pressure Air Test: Per Specification Section 40 05 00. Testing shall be performed prior to reconnecting services.

B. Cleaning and Video Assessment: Per Specification Section 40 05 00.

C. Deflection Test: Per Specification Section 40 05 00.

1. Long bores under improved areas such as pavements, at locations not to exceed 50 feet apart.
2. Railroad crossings: Top of all ties.

3.7 DISPOSAL OF EXCESS MATERIAL

A. All spoil shall be removed from the job site.

B. Upon completion of the trenchless pipe replacement operation, the Contractor shall restore all areas disturbed by these operations, including streets, cross-country easements, and wetland areas.

END OF SECTION

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SECTION 40 05 31
PIPE: PLASTIC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Plastic pipe.

B. Related Specification Sections include but are not necessarily limited to:

1. Division 00.
2. Division 01.
3. Section 40 05 00.

1.2 QUALITY ASSURANCE

A. See Specification Section 40 05 00.

B. Referenced Standards:

1. ASTM International (ASTM):
   a. PVC (polyvinyl chloride) materials:
      1) D1784, Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
      2) D1785, Standard Specification for Poly(Vinyl Chloride) PVC Plastic Pipe, Schedules 40, 80 and 120.
      3) D2467, Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 80.
      4) D3139, Standard Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
      5) D3212, Standard Specification for Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
   b. Installation:
      1) D2321, Standard Practice for Underground Installation of Thermosplastic Pipe for Sewers and Other Gravity-Flow Applications.
2. NSF International (NSF).

1.3 SUBMITTALS

A. See Specification Section 01 33 00 for requirements for the mechanics and administration of the submittal process.

B. See Specification Section 40 05 00.

PART 2 - PRODUCTS

2.1 PVC SEWER SERVICE LINE PIPING

A. General:

1. Provide Schedule 40 pipe with Schedule 40 fittings and appurtenances to locations shown on Drawings.
2. Furnish materials in full compliance to following material specifications:
   a. Manufacture pipe, fittings and appurtenances from polyvinyl chloride (PVC) compound which meets the requirements of Type 1, Grade 1 (12454-B) Polyvinyl Chloride as outlined in ASTM D1784.

b. Manufacture pipe, fittings and valves from materials that have been tested and approved for conveying potable water by the NSF.

B. Pipe:

1. Furnish pipe meeting requirements of ASTM D1785.
2. Joints for PVC pipe shall be the elastomeric-gasket type with a pressure rating not less than pipe pressure rating meeting performance requirements of ASTM D3139.

C. Fittings: Provide ASTM D2467 PVC socket type fittings having the same pressure and temperature rating as the pipe.

D. Flanges/Unions:

1. Furnish flanges and unions at locations shown on Drawings.
2. Provide either flanges or unions at valves, penetrations through structures and equipment connections.
3. For pipe larger than 2 IN, provide 150 LB socket type PVC flange.

E. Installation:

1. Field threading PVC will not be permitted.
2. Perform installation procedures, handling, thrust blocking, connections, and other appurtenant operations in full compliance to the manufacturer's printed recommendations and in full observance to plan details when more stringent.

F. Installation:

1. Field threading of PVC pipe will not be permitted.

2.2 SEWER PIPING

A. Materials:

1. Furnish materials in full compliance to the following material specification.
2. PVC pipe shall be rigid, unplasticized polyvinyl chloride (PVC) made of PVC plastic having a cell classification of 12454-B or 12454-C as described in specification ASTM D1784.
3. The requirements of this Specification are intended to provide for pipe and fittings suitable for non-pressure drainage of wastewater and surface water.
4. Joining systems shall consist of an elastomeric gasket joint meeting requirements of ASTM D3212.
5. Supply to the Engineer all information and sample of joining method for his evaluation.
   a. Only jointing methods acceptable to the Engineer will be permitted.
6. Provide pipe and fittings meeting or exceeding the following requirements:
   a. C900 DR-18.
7. Ensure impact strengths and pipe stiffnesses in full compliance to these Specifications.

B. Installation: Install pipe and fittings in accordance with ASTM D2321 and as recommended by the manufacturer.

1. Provide for a maximum deflection of not more than 5 percent.

C. Infiltration and Exfiltration:

1. The maximum allowable infiltration measured by test shall not exceed 100 GAL per inch of pipe diameter per mile per 24 HRS.
2. For exfiltration, all the pipe and fittings shall exceed performance requirements by an air test procedure as specified in Section 40 05 00.
3. Observe full instructions of the Engineer for carrying of testing procedures.
   a. Perform tests only during presence of the Engineer or his authorized representative.

4. Should any test on any section of pipe line disclose either infiltration rates greater than allowed or disclose air loss rate greater than that permitted, locate and repair the defective joints or pipes at no cost to Owner and retest until requirements stated are met.

D. Deflection:

1. After backfilling, each section of pipe shall be checked for deflection by pulling a mandrel through the pipe.
2. Pipe with deflection exceeding 5 percent of the inside diameter shall have backfill removed and replaced to provide a deflection of less than 5 percent.
3. Any repaired pipe shall be retested.

PART 3 - EXECUTION

3.1 IDENTIFICATION

A. Identify each length of pipe clearly at intervals of 5 FT or less.

1. Include manufacturer's name and trademark.
2. Nominal size of pipe, appurtenant information regarding polymer cell classification and critical identifications regarding performance specifications and NSF approvals when applicable.

B. Pipe Color

1. Waterline pipe shall be colored blue.
2. Sewer pipe shall be colored green.

END OF SECTION

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