**Index to**

**Section 01000 – Sanitary Sewer Pipe Cleaning**

[PART 1 GENERAL 3](#_bookmark2)

* 1. [SCOPE OF SERVICES AND WORK PHASING 3](#_bookmark3)
  2. [OWNER 4](#_bookmark4)
  3. [TIME OF PERFORMANCE, SCHEDULING AND LIQUIDATED DAMAGES 5](#_bookmark5)
  4. [COMPLIANCE AND ACCEPTANCE 5](#_bookmark6)
  5. [LIABILITIES AND ASSUMPTIONS 8](#_bookmark7)
  6. [SUBMITTALS 9](#_bookmark8)

[PART 2 SPECIAL PROVISIONS 11](#_bookmark9)

* 1. [OWNER RIGHTS 11](#_bookmark10)
  2. [EMERGENCY RESPONSE 11](#_bookmark11)
  3. [WORKING HOURS 12](#_bookmark12)
  4. [DECREASE/INCREASE IN SERVICE AND STOP WORK DUE TO INCLEMENT](#_bookmark13) [WEATHER 12](#_bookmark13)
  5. [PRE-CONSTRUCTION MEETING 12](#_bookmark14)
  6. [CLOSE-OUT PROCEDURES 13](#_bookmark15)
  7. [PRE-QUALIFICATIONS 13](#_bookmark16)

[PART 3 GENERAL PROVISIONS 14](#_bookmark17)

* 1. [MAINTENANCE OF TRAFFIC 14](#_bookmark18)
  2. [EXISTING UTILITIES 15](#_bookmark19)
  3. [REQUEST FOR SUPPLEMENTARY INFORMATION 15](#_bookmark19)
  4. [USE OF PREMISES 16](#_bookmark20)
  5. [PROTECTION OF TREES 16](#_bookmark21)
  6. [FENCING 16](#_bookmark22)
  7. [RESTORATION](#_bookmark23) 17
  8. [CLEANUP 17](#_bookmark24)
  9. [PROPERTY DAMAGE 17](#_bookmark25)
  10. ACCESS TO MUNICIPAL WATER SUPPLIES 18

[PART 4 EXECUTION 18](#_bookmark27)

* 1. GENERAL 18
  2. [SEWER CLEANING AND GRINDING OF SERVICE CONNECTIONS 18](#_bookmark29)
  3. [TELEVISION INSPECTION AND COMPUTERIZED EQUIPMENT 19](#_bookmark30)

[PART 5 PAYMENT FOR WORK 20](#_bookmark31)

[5.1 MEASUREMENT AND PAYMENT 20](#_bookmark32)

# 

# Section 01000

# sanitary sewer pipe cleaning

# PART 1 GENERAL

* 1. SCOPE OF SERVICES AND WORK PHASING
     1. The purpose of this bid is to obtain competitive unit prices for all labor, material, and equipment necessary to clean existing sanitary sewers ranging in size from 8- to 12-inch diameter. The work includes hydraulic root cutting and cleaning, grinding protruding break-in service connections, remote televising and recording of the sewer. All project locations will be within the Owner’s service area.
     2. The work to be completed on each section of sewer will be performed in phases as defined in the following:
        1. Phase 1 Pre-cleaning Inspection.  
           1. The preferred method for Pre-Cleaning Inspection is color CCTV conforming to NASSCO Pipeline Assessment Certification Program (PACP), and for the data to be exported electronically in a PACP certified format. Since this inspection is performed prior to cleaning, it is understood that the video may not provide an “unobstructed view of the entire pipe”.
           2. The Contractor may propose other methods to the Owner prior to bid for inspection such as, zoom camera inspection, digital sidewall scanning inspections, acoustical technology, etc.
           3. If the Contractor is performing the Pre-Cleaning Inspection, the method must be pre-approved by the Owner prior to inspection of the sewer interior.
        2. Phase 2 Sewer Pipe Cleaning. Based on the Owner’s review, he or she will determine if additional work will be required. At the sole discretion of the Owner is to either declare the work on the particular sewer segment complete or notify the Contractor of additional work (i.e. Phase 3: Light Sewer Cleaning, Heavy Cleaning, Deposit Cut, Root Cut Medium, Root Cut Ball, or Lateral Cut)
        3. Phase 3 Additional Sewer Pipe Cleaning (Optional). The Contractor shall perform the assigned additional work, which may be any one of the following items as defined in these specifications: Light Sewer Cleaning, Heavy Cleaning, Deposit Cut, Root Cut Medium, Root Cut Ball, or Lateral Cut
        4. Phase 4 Post Cleaning Inspection. Final televising of the sewer segment to evaluate the condition of the sewer segment after all cleaning has been performed in Phase 3. Phase 4 will be required to be performed and will be reimbursed at the bid unit price.
           1. The recorded video must show the entire circumference of the sewer. Any flow control to remove standing water and debris shall be incidental to the contract. It is not the intent of this specification to require bypass pumping to control heavy flow; however, the Contractor must, at a minimum, make reasonable effort to control the flow by using flushing equipment to temporarily retain flow or to remove standing water. The Contractor must also consider weather conditions to obtain the best video image of the sewer. This may require the Contractor to delay any video work after major rain events until the system can return to lower dry weather flow. The Contractor shall submit PACP data to include the electronic video reports, logs, etc. for the Owner’s review as required in Part 1 Section 6.
           2. The segments of sewer to be cleaned and televised through this contract will be located primarily within the paved areas of the public right-of-way; however, there may be some sewer segments that are located within public easements on private property. The successful bidder, with assistance of the Owner as required, will be responsible to coordinate and gain access to any and all sewer segments and will be responsible for any restoration in accordance with Part III Section 5. This will include written authorization between Contractor and landowner.
     3. The Contractor shall furnish all labor, components, materials, tools, and appurtenances necessary for the performance and completion of the contract.
     4. Award of the contract will be determined through an evaluation of bids and made in light of the best interest of the Owner.
     5. The Contractor will be held fully liable for any damages incurred that are caused by his or her negligence.
     6. Patents, Trade Secrets, and Copyrights: The Contractor shall pay all license fees and royalties and assume all costs incidental to the use in the performance of the work or the incorporation in the work of any invention, design, process, product or device which is the subject of patent rights, trade secrets protection rights, or copyrights held by others. The Contractor shall indemnify and hold harmless the Owner and Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorney’s fees and court and arbitration costs) arising out of any infringement of patent rights, trade secret protection rights, or copyrights incidental to the use in the performance of the work or resulting from the incorporation in the work of any invention, design, process, product or device not specified in the contract documents, and shall defend all such claims in connection with any alleged infringement of such rights.
  2. OWNER
     1. This contract will be administered and performed under the direction and inspection of the Owner. Questions pertaining to this contract, before and after award, should be directed to the Owner at 912-261-7108 and aburroughs@bgjwsc.org.
  3. TIME OF PERFORMANCE, SCHEDULING AND LIQUIDATED DAMAGES
     1. Upon award of the contract, the Contractor shall CCTV at least three (3) segments or 1,000 feet of pipe and submit the data to the Owner to verify that the CCTV database is compatible with the Owner’s PACP Database, and the deliverables are acceptable to the Owner. The Owner shall verify acceptability of the deliverables within five (5) business days of receipt. After the Owner verifies compatibility of the database, the Owner shall then issue to the Contractor a written “Notice to Proceed” including a date for commencement of work. The Contractor shall begin work on the date stated in the written “Notice To Proceed” (but no later than 10 calendar days after receipt) with an adequate force and sufficient resources to demonstrate due diligence in the performance of the contract.
     2. It is understood that the bidder may have other contracts with the Owner during the period of this contract. By bidding this work, the bidder is agreeing to provide an adequate number of crews in order to perform the work concurrently with due diligence and as specified in his approved schedule.
  4. COMPLIANCE AND ACCEPTANCE
     1. Compliance with this contract shall be complete when all conditions set forth in these specifications have been met. The following defines each work item, the level of effort, and quality of work that will be necessary to meet the intent of this specification:
     2. Pre-cleaning Inspection:
        1. The preferred method for Pre-Cleaning Inspection is color CCTV conforming to National Association of Sewer Service Companies’ (NASSCO) Pipeline Assessment Certification Program (PACP), exported electronically in a PACP compliant format. Other methods for inspection, including CCTV, zoom camera inspection, digital sidewall scanning inspections, acoustical technologies, etc. must be preapproved by the Owner prior to inspection of the sewer interior.
        2. Should the level or type of debris differ from the original inspection, the work type can be adjusted by the Owner to the proper work type and the work shall be paid at the adjusted, proper rate. The Contractor shall be responsible for providing evidence of the change in conditions to the Owner.
     3. Light Sewer Cleaning (Each Segment)
        1. Removal of Deposits Settled (DS):

|  |  |  |
| --- | --- | --- |
| a. | Up to 12-inches | 25% |
| b. | 13- to 24-inches | 15% |
|  |  |  |

* + - 1. The Contractor shall clean the sewer and associated manholes, including drop connections and benches, to remove all Deposits Settled (DS), so that the sewer is ready for televising. This will require an unlimited amount of passes of a hydraulic flusher to remove all loose debris and collect it for removal in the downstream manhole. All debris must be removed from the sewer, including any debris that may have been washed up into any service connections (does not include known pre-existing conditions in service connections), drop connections or the bench wall of the manholes. This item does not include any root cutting, deposit removal, or grinding of protruding service connections.
      2. Owner will provide a debris disposal location at 149 Indigo Drive, Brunswick, GA 31525. The Contractor is required to provide Owner with a report for each disposal to include sections cleaned, estimated quantities removed, and pictures.
    1. Heavy Sewer Cleaning (Each Segment)
       1. Removal of Obstructions (OB) and Deposits Settled (DS) that exceed percentage established for light cleaning. This also includes Deposits Attached Grease (DAGS) if able to remove with rotating nozzle or other mechanical means; not to include saws or cutters. Compliance with this section requires substantial effort towards cleaning.
       2. Under this bid item, the Contractor shall remove all obstructions in the sewer. All debris must be removed from the sewer, including any debris that may have been washed up into any service connections (does not include known pre-existing conditions in service connections), drop connections or the bench wall of the manholes. This includes all grease, rocks, debris, sticks, etc. that will reduce the hydraulic capacity of the sewer and limit future maintenance access of remote equipment. This work will include an unlimited number of passes by high velocity hydro-cleaning equipment. A mechanical/hydraulic Spinner Nozzle may be used where necessary at no additional cost to the Owner; however, the Contractor shall be responsible for any damage to the sewer or any service connections. This item does not include cutting/grinding protruding break-in connections, as that work will be paid under a separate bid item.
       3. The Contractor shall maintain detailed documentation of cleaning efforts made to remove these items. Such documentation shall be made available to the Owner at any time.
       4. The Contractor shall immediately notify the Owner if he believes that this level of cleaning will cause a sewer collapse due to the existing deterioration of the host pipe. The Owner’s determination whether to continue or stop work is final.
    2. Root Cut (Each segment)
       1. Root Cut Medium - Removal of Roots Medium (RM), and Root Balls (RB) in one or two joints.
       2. Root Cut Ball – Removal of Root Balls (RB) removed in at least 3 joints.
       3. The Owner shall determine if the sewer segment requires root cut cleaning. All roots must be screened, collected, and removed from the sewer for proper disposal.
       4. The Contractor shall immediately notify the Owner if he believes that these activities performed under this paragraph will cause a sewer collapse due to the existing deterioration of the host pipe. Owner's determination whether to continue or stop work is final.
    3. Deposit Cut (Each Segment)
       1. Removal of Deposits Attached Encrustation (DAE) and Deposits Attached Grease (DAGS) that require a cutter to remove.
       2. Under this bid item, the Contractor shall remove all obstructions in the sewer. All debris must be removed from the sewer, including any debris that may have been washed up into any service connections (does not include known pre-existing conditions in service connections), drop connections or the bench wall of the manholes. This includes all deposits, grease, debris, sticks, etc. that will reduce the hydraulic capacity of the sewer and limit future maintenance access of remote equipment. This work will include an adequate number of passes using high velocity hydro-cleaning equipment required to produce a clean pipe in accordance with these specifications. A mechanical/hydraulic root, chain cutter, etc. may be used where necessary at no additional cost to the Owner; however, the Contractor shall be responsible for any damage to the sewer or any service connections. This item does not include cutting/grinding protruding break-in connections, as that work will be paid under a separate bid item.
       3. Compliance with this section requires substantial effort towards cleaning, chipping, cutting, grinding, etc. to remove hardened deposits, grease, etc. The Contractor shall use remote CCTV equipment to monitor the progress of the work and ensure that the sewer is not damaged.
       4. The Contractor shall immediately notify the Owner if he believes that activities performed under this paragraph will cause damage due to the existing deterioration of the host pipe. The Owner's determination whether to continue or stop work is final.
       5. The Contractor shall maintain detailed documentation of cleaning efforts made to remove these items.
       6. If attached deposits cannot be removed by tools normally used in the industry, the Owner should be consulted immediately. The Owner and the Contractor should discuss whether to cancel the work on that segmentation or negotiate a flat rate or hourly rate for the Contractor to do the work.
    4. Lateral Cuts
       1. Removing protruding laterals, excludes DIP, SP, CAS etc.
       2. The Owner shall determine when break-in service connections will require grinding based on his review of the initial survey television inspection. The Contractor shall cut/grind the protruding service connection by using a remote grinding/cutting device capable of removing, concrete, vitrified clay, PVC and other types of pipe material. The device shall be specifically designed to cut/grind protruding service connections. The Contractor shall use remote CCTV equipment to monitor the progress of the work and ensure that the service connection is not damaged.
       3. The protruding break-in service connection shall be cut/ground flush to the main sewer pipe without scouring or damaging the main sewer or service connection. All cuttings must be screened, collected, and removed from the sewer for proper disposal.
       4. During the final survey television inspection, the Contractor shall slowly pan the entire circumference of the trimmed connection to verify the quality of the work.
       5. The Contractor shall immediately notify the Owner if he believes that the pipe is not structurally sound. The Contractor and Owner shall discuss the severity and risk of cutting/grinding the lateral. The Owner shall then determine, if they want the lateral cut/ground, at the Owners risk, or if the work should not be performed on this contract.
       6. If other than typical lateral materials are encountered, the Contractor shall notify the Owner and the Owner and Contractor should discuss the ability, costs and risks associated with cutting/grinding the lateral. The Owner shall decide, whether to cut/grind the lateral or to not cut/grind the lateral. If the Owner decides to cut/grind the lateral, the price should be negotiated between the Owner and Contractor, prior to cutting/grinding the lateral.
    5. Debris Records
       1. The Contractor shall keep records of types of debris, removed from each segment of pipe and provide these records to Owner in the format requested by Owner.
    6. Final Survey Television Inspection
       1. As in the initial survey television inspection pay item, CCTV inspections will be conducted entirely in digital format.
       2. All CCTV work shall conform to the most current NASSCO PACP standards. The documentation of the work shall consist of NASSCO PACP CCTV Reports, Unmodified NASSCO PACP database, logs, electronic reports, etc. noting defects and observations encountered during the inspection.
  1. LIABILITIES AND ASSUMPTIONS
     1. Liability and Assumptions

In order to minimize and appropriately allocate costs and risks, it is in the best interest of all contracted parties (Owner and Contractor) and prospective parties (i.e. Bidders) to understand thoroughly the risks associated with any particular project. For that reason we will define herein, what is standard practice in the procurement and completion of sewer cleaning and inspection so that everyone involved can effectively assess their obligations, risks, and duties.

* + 1. Assumptions

It is reasonable and customary to assume the following, unless otherwise detailed in writing:

* + - 1. The Owner has provided the Parties (Contractor and/or Bidders), in writing, with all of the information that the Owners possess that would allow the Parties to accurately and fully assess the entire scope of the project.
      2. The Owner possesses or has contracted the services of a person or entity who possesses the knowledge, expertise and experience to fully understand the scope of the service for which they are attempting to contract with the Parties.
      3. The Parties are knowledgeable, capable and legally authorized to contract for the services in question.
      4. The infrastructure for which the services are requested are in suitable condition to allow for the activities which are usual and customary for the services requested without undue risk to the Parties equipment or personnel, unless otherwise described by the Owner in writing.
    1. Liabilities

Should it be found during initial investigation and/or during the course of performance that conditions are different than those which are typical and customary and outside of the assumptions listed above, the Contractor may negotiate a reasonable change in terms. The Owner reserves the right to re-bid such work if it results in a substantial increase in cost by more than 5% of the total project.

* + 1. Notification
       1. If observed defects are believed to be such that further cleaning operations may compromise the structural integrity and/or cause the pipe to become unusable, the Contractor must provide written communication to the Owner’s designee of the observed condition(s) and reason to believe that continued cleaning operations may cause substantial damage. The Owner will then direct the Contractor as to what services, precautions, etc., the Owner will require of the Contractor. If the contract documents do not address this potential, then the Owner and Contractor will negotiate in good faith, the conditions under which the work is to continue or cease to continue.
       2. This exception may only be used to prevent asset damage and shall not be used to eliminate difficult or adverse cleaning areas that were previously documented in these documents or by prior written communication with the Owner.
  1. SUBMITTALS
     1. All submittals are due as scheduled. Work will not proceed until all submittals are received and approved. The project manager reserves the right to adjust the due dates of the submittals based on Contractor performance. The Contractor shall label each submittal indicating what is represented, name of Contractor, and project number. All submittals identified as being in error shall be re-performed and corrected at the Contractor’s expense.
     2. Submittals Required with Bid Documents include:
        1. List of references per Part 2 Section 7.
        2. Documentation of Certification of PACP Software
     3. Liability Insurance
        1. The Contractor's commercial general liability limits must be not less than $1,000,000, each occurrence, subject to general aggregate of $1,000,000, and include pesticide or herbicide applicator coverage.
        2. Liability Insurance. Seven (7) days prior to the pre-construction meeting, the Contractor shall submit written evidence that he has obtained pollution liability coverage; limits must be not less than $1,000,000 combined single limit each occurrence/aggregate. In addition, the Contractor's commercial general liability limits must be not less than $1,000,000, each occurrence, subject to general aggregate of $1,000,000, and include pesticide or herbicide applicator coverage. The Owner shall be named as an additional insured with respect to General Liability.
     4. Submittals required of the Successful Bidder seven (7) days prior to the Pre- construction Meeting:
        1. Name of the project supervisor and resumes.
        2. Documentation of NASSCO PACP certification for all CCTV operators, database and software.
        3. Site Safety Plan. A complete generic site safety plan must be submitted one week prior to the pre-construction meeting. Work will not begin until an approved site safety plan is in place.
        4. Sample inspection CCTV data and video or data from other approved inspection method.
     5. Submittals Required for the Pre-construction Meeting:
        1. An initial comprehensive schedule of work, see Part 4, Paragraph D (To be approved by the Owner)
        2. Management Organization: Provide an organization chart depicting the essential organizational elements and senior personnel of the proposed Contractor and the functions and interrelationships of the personnel proposed to provide technical support, project management and supervision for this project. Provide succinct resumes of the personnel proposed to provide technical support and project management for this project. The personnel designated in the management summary for essential positions shall not be changed except with the permission of Owner. The Owner will only approve such a change when, in its opinion, the substitute personnel have equal or greater qualifications and experience to those intended to be replaced.
        3. Proof that Contractor is an approved/bonded Contractor with the Owner.
     6. Submittals Required One Week Prior to Any Cleaning & Televising Work:
        1. Site specific site safety plan addenda.
        2. Entry releases, if applicable
     7. Weekly Submittals
        1. Detailed updates to the work schedule will be provided to the project manager no later than 1:00 p.m. on the Friday preceding the next week's cleaning and televising work.
        2. DVDs, logs, and / or electronic worksheets submitted 7 days prior to work). All field paperwork must be submitted before the Contractor’s invoice will be processed for payment.
        3. Corrections to punch list items as required by the project manager to fulfill the requirements of this specification.
     8. Final Submittals Prior to Payment
        1. Corrections to punch list items as required by the Owner to fulfill the requirements of this specification.

# PART 2 SPECIAL PROVISIONS

* 1. OWNER RIGHTS
     1. The Owner reserves the right to stop the work when, in the project manager's judgment, the Contractor's work or activities are threatening the health and safety of the public or endangering the environment or endangering the waters of the state. Work shall not proceed until a satisfactory resolution has been achieved, as determined in the sole and unfettered opinion of the Owner.
     2. The Contractor or Subcontractor shall not perform any work which is not specifically identified in the work schedule unless approved by the Owner. Notification of such work must be received no later than 8:00 a.m. on the day the work is to be performed. A list of persons available to be notified will be given at the pre-construction meeting.
  2. EMERGENCY RESPONSE
     1. The Contractor shall provide a telephone number to the Owner. This number is intended for the project manager’s use in contacting the evening/weekend/holiday emergency work crew for emergencies resulting from the Contractor’s actions or lack thereof during this project. This crew shall be responsible for contacting the Owner within one-half hour after the first verbal or electronic notification. If the Contractor's crew has not responded to the site of the emergency within one hour of the first summons, verbal or electronic, the Owner will make all necessary repairs and bill the Contractor for all work performed. Costs related to the emergency response will be incidental to the contract and not measured for payment.
  3. WORKING HOURS
     1. The Contractor must complete all work such that no homeowner is without sewer service, unless otherwise directed by the Owner. Local noise ordinances or agencies having control over roadway closures may control starting or stopping operations. Prior to starting operations, the Contractor shall advise the Owner of the restrictions imposed by the local agencies.
     2. No work will be allowed on weekends or holidays except at the discretion of the Owner.
     3. Any weekend or holiday work requests should be submitted to the Owner for review at least 48 hours prior to proposed work.
  4. DECREASE/INCREASE IN SERVICE AND STOP WORK DUE TO INCLEMENT WEATHER
     1. The Owner, at its option, may increase or decrease any or all service requirements provided for under this contract. The Owner further reserves the right to suspend or stop the performance of any or all of the work of this contract due to inclement weather conditions.
  5. PRE-CONSTRUCTION MEETING
     1. Following award of the contract and before starting any work the Contractor, job superintendent/project manager, and crew leader shall meet with the Owner. The Contractor will be notified of the date, time, and place of the meeting.
     2. Attendance:
        1. Owner
        2. Owners Inspector
        3. Engineer
        4. Contractor’s Representative
        5. Contractor's Superintendent
        6. Major Subcontractors
        7. Major Suppliers
        8. Others, as appropriate
     3. Agenda:
        1. Distribution and discussion of:
           1. List of Major Subcontractors and Suppliers.
           2. Projected Construction Schedules.
        2. Critical Work Sequencing.
        3. Major Equipment Deliveries and Priorities.
        4. Project Coordination.
           1. Designation of Responsible Personnel.
        5. Procedures and processing of:
           1. Field decisions.
           2. Requests for Information.
           3. Submittals.
           4. Deliverables
           5. Change Orders.
           6. Applications for Payment.
        6. Procedures for maintaining Record Documents.
        7. Use of Premises:
           1. Office, Work and Storage Areas.
           2. Owner's Requirements.
        8. Construction Facilities, Controls and Construction Aids.
        9. Procedures for Reporting Sanitary Sewer Overflows (SSOs).
        10. Temporary Utilities.
  6. CLOSE-OUT PROCEDURES
     1. Progress Meetings: Project closeout will be completed in phases by project. The Owner will hold progress meetings at predetermined intervals, or as determined necessary by the Owner. Items covered in the meetings include the following:
        1. Punch List: This list will detail all items requiring correction, repair, or improvements in order to be accepted. The Contractor will address these items within 7 calendar days or as specified by the Owner. Failure to complete punch list items will result in a stop work notice and delay of payment until completed to the satisfaction of the Owner.
        2. Reports and Submittals: Final reports, post-tapes and other submittals previously described will be finalized and submitted.
        3. Review of the status of pay estimates.
        4. Issue project worksheets, as necessary.
        5. Work scheduling issues and weather delays.
  7. PRE-QUALIFICATIONS
     1. The successful low bidder must have an onsite field supervisor with a minimum five (5) years of experience specializing in the cleaning and televising of sewers. A foreman for each crew performing cleaning and television inspection with a minimum of five years of experience specializing in that type of work may be substituted for the onsite field supervisor requirement. The Contractor shall provide the names, titles, phone numbers and addresses of a minimum of two references that can be used to verify this experience. The references must be contract managers or persons of authority over cleaning and televising work performed by the Contractor.
        1. The Contractor shall also provide 5 similar projects with cleaning and inspection equipment as proposed for this project.
        2. The Contractor must have foreman or supervisors meeting all pre-qualifications for the duration of the contract.
     2. PACP Requirements
        1. Current NASSCO PACP certification of all CCTV operators, working on this project, will be required for all CCTV work.
        2. Database shall be an unmodified NASSCO-PACP (Current Version) Certified Access Database.
        3. CCTV Software shall be NASSCO-PACP (Current Version) certified.
        4. CCTV inspections (Video and Data Collected) will be conducted entirely in electronic format

# PART 3 GENERAL PROVISIONS

* 1. MAINTENANCE OF TRAFFIC
     1. The Contractor shall be responsible for maintaining "local" traffic at all times and for notifying the proper authorities regarding the closing of the roads. The Contractor will be responsible for obtaining all permits required for maintenance of traffic.
     2. The Contractor shall not begin work until standard barricades and warning signs are in an acceptable position and the markers and signs conform to the Federal Highway Administration (FHWA) "Manual of Uniform Traffic Control Devices for Streets and Highways" and all applicable state and local requirements. The Contractor assumes all responsibilities and liabilities regarding strict adherence to applicable sections for the maintenance of traffic and public safety as set forth in the FHWA "Manual of Uniform Traffic Control Devices for Streets and Highways”. All traffic control devices must be in place prior to starting work.
     3. The cost of all traffic control devices shall not be paid separately, but shall be included in the other prices/items in the contract.
     4. The Contractor shall maintain local traffic at all times during all phases of this project in a manner causing the least amount of inconvenience to the abutting property owners. Temporary driveways, temporary roadways, or run around as may be necessary to provide vehicular access to and from the abutting properties shall be constructed, maintained, and subsequently removed by the Contractor as directed by the Owner.
     5. The portion of the pavement not affected by the work shall be kept clear of all material and equipment.
     6. The Contractor shall hold harmless the Owner and all its representation from all suits, actions, of claims of any character brought on account of any injuries or damages sustained by any person or persons or property in the performance of this contract.
     7. If at any time traffic has to be blocked (emergencies only), the Contractor shall notify the nearest fire, police departments and service departments.
     8. The cost of maintenance of traffic shall be incidental to the contract and not measured for payment.
  2. EXISTING UTILITIES
     1. The Contractor must take the necessary precautions for the protection of any utility encountered on the project or the restoration of any utility damaged during the work.
     2. If an excavation is required, the Contractor shall notify, at least 48 hours before breaking ground, all public or private service corporations having wire, poles, pipes, conduit, manholes, or other structures that may be affected by this operation, including all structures which are affected and not shown on these plans. Owners of underground utilities, which are members of the state’s one call service, can be notified by calling the one call service. Non-member underground utility owners must be called directly.
     3. All maintenance, repair, and replacement of existing utilities shall be in accordance with the rules and regulations of the various utility companies having jurisdiction.
     4. All existing storm sewers, driveway drains, surface drain pipes and other property, removed or damaged during construction shall be repaired and reconnected by the Contractor as directed by the Owner at no additional cost to the Owner.
  3. REQUEST FOR SUPPLEMENTARY INFORMATION
     1. It shall be the responsibility of the Contractor to make timely requests of the Owner for supplemental information, which should be furnished by Owner under the terms of this contract, and as required in the planning and execution of the work. Such requests may be submitted from time to time as the need approaches, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved to avoid delay.
     2. Each request shall be in writing, and list the various items and the latest day by which each will be required by the Contractor. The first list shall be submitted within two (2) weeks after contract award and shall be as complete as possible at that time. The Contractor shall, if required, furnish promptly any assistance and information the Owner may require in responding to these requests of the Contractor. The Contractor shall be fully responsible for all delays arising from failure to comply with this section.
  4. USE OF PREMISES
     1. The Contractor shall not trespass upon or in any way disturb private property without first obtaining written permission from the Owner to do so. A copy of such written permission shall be furnished to the Owner prior to accessing the site.
     2. It shall be the Contractor's responsibility to work equipment around poles, trees, or other obstructions and to do so at his own expense.
     3. If the Contractor finds it necessary to obtain additional working area, it shall be the Contractor's responsibility for its acquisition.
     4. The Contractor shall, at no additional expense, restore such property to the full satisfaction of the Owner and shall obtain from the Owner a written release stating that restoration has been satisfactorily made. A copy of the completed written release shall be furnished to the Owner prior to payment.
     5. All items within the street right-of-way or sewer easement shall be removed, or removed and replaced, or restored as directed by the Owner at no additional cost to the Owner.
     6. The Contractor shall ensure all employees have a badge or visible identification during any time that they on the project site or within private property. This identification must be worn so that it is readily recognized and readable to the public.
  5. PROTECTION OF TREES
     1. The Contractor shall avoid any unnecessary damage to trees. Branches which overhang the project limits and which interfere with the operation of equipment shall be tied back to avoid damage, if possible. Where injury to branches is unavoidable, the branches shall be sawed off neatly at the trunk or main branch. The Contractor, at no additional expense, shall remove any trees damaged beyond saving, and make restitution to the Owner (public or private).
  6. FENCING
     1. Any fences, including hedge and shrubs that need to be removed to facilitate the work shall be replaced in kind or with repairs satisfactory to the Owner, at the Contractor's expense. Replacement of fences, hedges, and shrubs shall be considered incidental to the contract and not measured for payment.
  7. RESTORATION
     1. All roadway berms and drainage ditches disturbed by the work shall be restored, reshaped, and graded to drain.
     2. Pavement restoration, if necessary, shall conform to the Owner's specifications. Trench backfill and compaction shall be in conformance with the local street restoration jurisdiction.
     3. The remediation of sunken trenches caused by activities conducted in this contract shall be the Contractor's responsibility. Sunken areas shall be backfilled and compacted to meet adjoining grades; the surface shall be re-seeded or resurfaced with asphalt or concrete matching the existing surfacing.
     4. The Contractor shall restore unpaved areas by seeding and mulching. No direct payment will be made for seeding and mulching.
     5. Driveways shall be restored in accordance with the Owner's specifications depending upon who has jurisdiction for the driveway.
     6. All disturbed areas shall be restored as nearly as possible to their original condition.
     7. All restoration shall be completed in strict accordance with the appropriate items of the specifications as directed by the Owner.
     8. The cost of all restoration of streets, pavement markings, drives, walks; sod, etc. shall be incidental to the contract and not measured for payment.
     9. The restoration of sod areas and driveways shall be kept current with the project work. Failure to keep restoration of these items completed reasonably close shall result in a stop work notice and delay of payment until such restoration is completed to the satisfaction of the Owner.
  8. CLEANUP
     1. The Contractor shall keep the work area in an uncluttered condition by the frequent removal of debris. The Contractor shall remove all debris and unused material and leave the area in a condition similar to the condition of the area before any work was performed.
  9. PROPERTY DAMAGE
     1. The Contractor will be required to make repairs and/or clean the property immediately if there is any damage to private or public property caused by activities related to this contract.
     2. The Contractor shall immediately investigate any and all reports of sewage backing up into fixtures served by the sewer segment that is being cleaned or televised.
  10. ACCESS TO MUNICIPAL WATER SUPPLIES
      1. The Contractor will be required to rent a hydrant meter from the Owner for access to the municipal water supply. Please contact JWSC Meter Services Manager Kalem Head at 912-261-7103 to rent a hydrant meter. An initial deposit of $2,000 which will be refunded when the project is completed and the meter returned to JWSC.
      2. The cost of water should not be billed separately, but shall be included in the other prices/items in the contract.

# PART 4 EXECUTION

* 1. GENERAL
     1. The Contractor shall furnish and maintain, in good condition, all cleaning and televising equipment necessary for proper execution of the work.
     2. Maintaining Flow: It will be the responsibility of the Contractor, throughout the tenure of this contract, to provide and maintain sufficient flow at all times to pass any surge in flow and prevent any SSOs due to obstruction caused by cleaning or CCTV equipment.
     3. Retrieval of Materials and Equipment: It shall be the Contractor's responsibility to remove materials and equipment that has been lodged in the sewer from cleaning, television inspection, or point repair excavations.
     4. Work Schedule. This schedule shall outline the sequence in which the Contractor proposes to conduct his operations and shall be approved by the Owner before work is started. The Contractor shall use a time-scaled logic diagram format. The level of detail of activities shall provide clear, concise communication of the plan of work. At a minimum, activities showing initial mobilization, start-up, cleaning and televising, and any resultant point repairs shall be included.
     5. Original and updated schedules must be provided to the Owner in writing on appropriately sized single sheets. A color print will be required in order to distinguish different types of activities from one another. The software used for producing the schedules must have the capability to tailor the form and format of schedules, and accompanying reports, to the Owner’s requirements.
     6. The Owner may require additional updates to the schedule as changes occur. These additional updates will be submitted to the project manager within 48 hours of the request. Changes to the schedule are subject to approval of the Owner.
  2. SEWER CLEANING AND GRINDING OF SERVICE CONNECTIONS
     1. The Contractor shall provide equipment that is specifically designed and constructed for sewer cleaning. Solids and debris resulting from the cleaning operation shall be collected and removed from the downstream manhole and disposed of at a site selected by the Owner and approved by appropriate jurisdictional personnel. Under no circumstances shall sewage solids be dumped onto the surface, street, or into ditches, inlets, or storm drains.
     2. The Contractor shall use the manufacturer’s recommended size tools for the various size pipes. Equipment recommended by the manufacturer to protect the manhole and pipe, such as pull-in slant jack rollers and roller and yoke assembly, roller manhole jacks, etc. shall be utilized.
     3. The Contractor shall dispose of all sanitary debris and material at a location to be provided and directed by the Owner. The Contractor shall not be reimbursed for disposal costs.
     4. The Contractor is required to submit documentation of the work that is performed and the type of debris removed, as well as landfill permits and disposal documentation.
     5. The Contractor shall have a CCTV camera in the sewer, during all cleaning operations to include: Lateral Cut and Deposit Cut. The camera shall be used for the Contractor's verification that the cleaning equipment is not damaging the public sewer. No submittal is required for this item and the cost for monitoring the cleaning equipment operation shall be included in the associated unit cost for the cleaning item. This in no way waives the Contractor's responsibility for damaging the sewer but is intended to bring the resulting damage to the Contractor's attention so that the operation can be stopped in a timely manner.
  3. TELEVISION INSPECTION AND COMPUTERIZED EQUIPMENT
     1. The Contractor shall use a color pan, tilt and zoom, camera or a digital side scanning camera (panoramic) specifically designed and constructed for sewer inspection. Each sewer to be televised shall be suitably isolated to eliminate or control flow during video inspection or panoramic inspection to allow for the entire circumference of the pipe to be viewed. Lighting for the camera or panoramic scanning camera shall provide a clear picture of the entire periphery of the existing sewer. The pan, tilt, zoom camera shall pause, pan, and visually inspect all service connections, pipe ends, and maintenance or structural defects. If utilizing a panoramic view inspection system, pausing and panning is not necessary during the inspection and can be used by the Owner if the image clearly depicts the inside of the lateral for post processing of the scans. Images of both manholes of each segment shall also be provided on each CCTV report to document their condition from the casting to the invert. All service connections that have cracked or defective pipe, roots, and/or grease shall be dye tested during the video inspection or after the panoramic inspection utilizing a pan, tilt, zoom camera. Addresses for all service connections dye tested will be noted. The address of each investigation shall be clearly noted on each CCTV report. Provide monitoring and video recording of the televised sewer inspection, locating each sewer service connection entering the sewer. If a blockage cannot be removed and hampers the televising of the sewer in one direction, then the Contractor shall attempt to complete the segment by televising from the other manhole to complete the segment. This reversal must immediately follow the initial direction on the same report. The Contractor must immediately report the obstruction to the Owner. Perform all CCTV inspections in accordance with NASSCO’s Pipeline Assessment Certification Program (PACP). CCTV inspections will be conducted entirely in digital format. The entire pan, tilt, and zoom inspection survey shall be recorded in MPEG-1 format written in a digital format (ex. DVD, Hard Drive) and submitted with digital links to the survey. All panoramic side scanning inspection survey shall be recorded in an acceptable panoramic format and submitted with digital links to the survey. All cleaning and television inspection reports shall be with-in +/- two (2) feet of the measured linear footage between manholes along the existing sewer centerline from the start of pipe to end of pipe. Work not following these specifications may be rejected for payment and the Contractor may be required to re do the work.
     2. CCTV Reports, logs, electronic reports, and worksheets must include the following information and conform to the applicable guidelines:
        1. CCTV Reports, NASSCO PACP Certified Database and electronic worksheets must accompany all inspection work.
        2. Cleaning Reports: All cleaning work must be documented, as specified by the Owner.
        3. All Owner and NASSCO PACP required header information must be fully and accurately entered on all CCTV reports. See Header Field Checklist for mandatory and required Header Fields.

# PART 5 PAYMENT FOR WORK

* 1. MEASUREMENT AND PAYMENT
     1. Cleaning of sewers will be measured for payment by the linear foot of the various diameters of sewer actually cleaned and verified through television inspection. In cases where the sewer is entirely inspected manhole-to-manhole, payments will be based on the measured linear footage between manholes along the existing sewer centerline from the center of the manhole at the unit price submitted on the unit price page.
     2. Lateral Cuts will be calculated for payment based on multiplying the number of laterals satisfactorily completed and meeting the specification governing final acceptance, by the bid unit price for each.
     3. All invoicing will be by sewer segment and payment and will not be made until all work; including punch list items (rework and additional work) are completed for each sewer segment. Any invoice for sewer segments that are not complete will not be accepted by the Owner.
     4. The following items of work will not be measured for payment but the cost thereof will be considered as incidental to the contract:
        1. Data entry, computerized equipment, software, and hardware to submit the required electronic submittals, including the DVDs, records, and logs.
        2. Completion of all electronic forms.
        3. Removal and disposal of debris.
        4. Photographic equipment and supplies used to show sewer pipe and manhole defects.
        5. Bypass pumping and flow control where required by the Contractor to perform his or her work.
        6. Providing temporary and final paving at any proposed excavations.
        7. Providing temporary and final restoration of grass areas.
        8. Emergency after hours response.
        9. Re-televising and re-cleaning following a point repair completed by the Contractor.
        10. Demobilization and mobilization because of suspension of work.
        11. Updates to the schedule as required by the Owner.
        12. Right of entry access to private property.
        13. Dye testing of service connections in order to meet the CCTV specification.
     5. In order for the Owner to properly and accurately track costs of the contract, the Contractor shall submit the final invoice on each project within 30 days after the completion of the project.
     6. Performance and Payment Bond: The bond securing the performance of the contract shall be effective for the full maximum period of the contract including the optional renewal period(s) specified. The bond amount indicated shall be deemed adequate surety for the initial and optional renewal periods. The cost of performance surety shall be treated as an overhead expense and shall be included in the bid amounts. The Owner shall not pay the cost of surety as a direct bill item.

\*\*END OF SECTION\*\*

**Index to**

**Section 02000 – Sanitary Sewer Pipe Condition assessment using cctv**

[PART 1 GENERAL 23](#_bookmark2)

* 1. [SCOPE OF SERVICES AND WORK PHASING 23](#_bookmark3)
  2. OWNER 24
  3. [TIME OF PERFORMANCE, SCHEDULING AND LIQUIDATED DAMAGES 24](#_bookmark4)
  4. [COMPLIANCE AND ACCEPTANCE 25](#_bookmark5)
  5. [LIABILITIES AND ASSUMPTIONS 25](#_bookmark6)
  6. [SUBMITTALS 26](#_bookmark7)

[PART 2 SPECIAL PROVISIONS 28](#_bookmark8)

* 1. [OWNER RIGHTS 28](#_bookmark9)
  2. [EMERGENCY RESPONSE 28](#_bookmark10)
  3. [WORKING HOURS 28](#_bookmark11)
  4. [DECREASE/INCREASE IN SERVICE/STOP WORK DUE TO INCLEMENT](#_bookmark12) [WEATHER 29](#_bookmark12)
  5. [PRE-CONSTRUCTION MEETING 29](#_bookmark13)
  6. [CLOSE-OUT PROCEDURES 30](#_bookmark14)
  7. [PRE-QUALIFICATIONS 30](#_bookmark15)

[PART 3 GENERAL PROVISIONS 31](#_bookmark16)

* 1. [MAINTENANCE OF TRAFFIC 31](#_bookmark17)
  2. [EXISTING UTILITIES 31](#_bookmark18)
  3. [REQUEST FOR SUPPLEMENTARY INFORMATION 32](#_bookmark19)
  4. [USE OF PREMISES 32](#_bookmark20)
  5. [PROTECTION OF TREES 33](#_bookmark21)
  6. [FENCING 33](#_bookmark22)
  7. [RESTORATION 33](#_bookmark23)
  8. [CLEANUP 34](#_bookmark24)
  9. [PROPERTY DAMAGE 34](#_bookmark25)
  10. [ACCESS TO MUNICIPAL WATER SUPPLIES 34](#_bookmark26)

[PART 4 EXECUTION 35](#_bookmark27)

* 1. [GENERAL 35](#_bookmark28)
  2. [TELEVISION INSPECTION AND COMPUTERIZED EQUIPMENT 35](#_bookmark29)

[PART 5 PAYMENT FOR WORK 37](#_bookmark30)

[5.1 MEASUREMENT AND PAYMENT 37](#_bookmark31)

# Section 02000

# sanitary sewer pipe condition assessment using cctv

## PART 1 GENERAL

* 1. SCOPE OF SERVICES AND WORK PHASING
     1. The purpose of this bid is to obtain competitive unit prices for all labor, material, and equipment necessary to inspect via closed-circuit television (CCTV) existing sewers. The work includes remote televising and recording of the sewer. All project locations will be within the Owner’s service area.
     2. The work to be completed on each section of sewer will be performed in phases as defined in the following:
        1. Phase 1: Inspection.
           1. Sewer sections shall be inspected by means of remote CCTV. If a blockage hampers the inspection of the sewer in one direction, then the Contractor shall attempt to complete the section by televising from the other manhole to complete the section. The Contractor must immediately report the obstruction to the Owner or his representative (hereinafter referred to as “Owner”). All CCTV work shall conform to Current NASSCO-PACP standards.
           2. CCTV inspections will be delivered entirely in electronic format.

All PACP Header information shall be completed in accordance with PACP Guidelines. In addition to mandatory Header fields, additional fields are required as noted on the attached Header Field Matrix.

The documentation of the work shall consist of PACP CCTV Reports, PACP database, logs, electronic reports, etc. noting important features encountered during the inspection. The speed of travel shall be slow enough to inspect each pipe joint, tee connection, structural deterioration, infiltration and inflow sources, and deposits, but should not, at any time, be faster than 30 feet per minute, except as noted otherwise in this document.

The camera must be centered in the pipe to provide accurate distance measurements to provide locations of features in the sewer and these footage measurements shall be displayed and documented on the video. All PACP Observations shall be identified by audio and on PACP log. All video must be continuously metered from manhole. The pipe should be clean enough to ensure all defects, features and observations are seen and logged. If cleaning is required, see Section 01000 – Sanitary Sewer Pipe Cleaning.

* + 1. The Contractor shall furnish all labor, components, materials, tools, and appurtenances necessary for the performance and completion of the contract.
    2. Award of the contract will be determined through an evaluation of bids and in the best interest of the Owner.
    3. The Contractor will be held fully liable for any damages incurred that are caused by his or her negligence.
    4. Patents, Trade Secrets, and Copyrights: The Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the work or the incorporation in the work of any invention, design, process, product or device which is the subject of patent rights, trade secrets protection rights, or copyrights held by others. The Contractor shall indemnify and hold harmless the Owner and Engineer and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorney’s fees and court and arbitration costs) arising out of any infringement of patent rights, trade secret protection rights, or copyright incident to the use in the performance of the work or resulting from the incorporation in the work of any invention, design, process, product or device not specified in the contract documents, and shall defend all such claims in connection with any alleged infringement of such rights.
  1. OWNER

This contract will be administered and performed under the direction and inspection of the Owner or his designated representative. Questions pertaining to this contract, before and after award, should be directed to the Owner at 912-261-7108 and aburroughs@bgjwsc.org.

* 1. TIME OF PERFORMANCE, SCHEDULING AND LIQUIDATED DAMAGES
     1. Upon award of the contract, the Contractor shall CCTV at least three (3) segments or 1,000 feet of pipe and submit the data to the Owner to verify that the CCTV database is compatible with the Owner’s PACP Database, and the deliverables are acceptable to the Owner. The Owner shall verify acceptability of the deliverables within five (5) business days of receipt. After the Owner verifies compatibility of the inspection deliverables including the database, the Owner shall then issue to the Contractor a written “Notice to Proceed” including a date for commencement of work. The Contractor shall begin work on the date stated in the written “Notice To Proceed” (but no later than 10 calendar days after receipt) with an adequate force and sufficient resources to demonstrate due diligence in the performance of the contract.
     2. It is understood that the bidder may have other contracts with the Owner during the period of this contract. By bidding this work, the bidder is agreeing to provide an adequate number of crews in order to perform the work concurrently with due diligence and as specified in his approved schedule.
  2. COMPLIANCE AND ACCEPTANCE
     1. Compliance with this contract shall be complete when all conditions set forth in these specifications have been met. The following defines each work item, the level of effort, and quality of work that will be necessary to meet the intent of this specification.
     2. Television Inspection
        1. As in the initial survey television inspection pay item, CCTV inspections will be delivered entirely in electronic format.
        2. All CCTV work shall conform to the most current NASSCO PACP standards. The documentation of the work shall consist of NASSCO PACP CCTV Reports, NASSCO PACP database, logs, electronic reports, etc. noting defects and observations encountered during the inspection.
  3. LIABILITIES AND ASSUMPTIONS
     1. Liability and Assumptions

In order to minimize and appropriately allocate costs and risks, it is in the best interest of all contracted parties (Owner and Contractor) and prospective parties (i.e. Bidders) to understand thoroughly the risks associated with any particular project. For that reason we will define herein, what is standard practice in the procurement and completion of sewer cleaning and inspection so that everyone involved can effectively assess their obligations, risks and duties. Liability for removal of equipment that becomes stuck in the sewer should be discussed in the contract.

* + - 1. Negligence Caused – Contractor
      2. Owner Decision to proceed after concerns raised – Owner
      3. Unforeseen Hazard (I.E. hole in pipe under flow line and not visible) – To be discussed in advance to mutually agree upon liability based on the CCTV leading up to the hazard.
    1. Assumptions
       1. It is reasonable and customary to assume the following, unless otherwise detailed in writing:
          1. The Owner has provided the Parties (Contractor and/or Bidders), in writing, with all of the information that the Owners possess that would allow the Parties to accurately and fully assess the entire scope of the project.
          2. The Owner possesses or has contracted the services of a person or entity who possesses the knowledge, expertise and experience to fully understand the scope of the service for which they are attempting to contract with the Parties.
          3. The Parties are knowledgeable, capable and legally authorized to contract for the services in question.
          4. The infrastructure for which the services are requested are in suitable condition to allow for the activities which are usual and customary for the services requested without undue risk to the Parties equipment or personnel, unless otherwise described by the Owner in writing.
    2. Liabilities

Should it be found during initial investigation and/or during the course of performance that conditions are different than those which are typical and customary and outside of the assumptions listed above, the Contractor may negotiate a reasonable change in terms. If the Owner and the Contractor cannot agree on a change in terms, the Owner reserves the right to re-bid or cancel such work.

* + 1. Notification
       1. If observed defects are believed to be such that further operations may compromise the structural integrity and/or cause the pipe to become unusable, the Contractor must provide written communication to the Owner’s designee of the observed condition(s) and reason to believe that continued operations may cause substantial damage. The Owner will then direct the Contractor as to what services, precautions, etc., the Owner will require of the Contractor. If the contract documents do not address this potential, then the Owner and Contractor will negotiate in good faith, the conditions under which the work is to continue or cease to continue.
       2. This exception may only be used to prevent asset damage and shall not be used to eliminate difficult or adverse areas that were previously documented in these documents or by prior written communication with the Owner.
  1. SUBMITTALS
     1. All submittals are due as scheduled. Work will not proceed until all submittals are received and approved. The Owner reserves the right to adjust the due dates of the submittals based on Contractor performance. The Contractor shall label each submittal indicating what is represented, name of Contractor, and project number. All submittals identified as being in error shall be re-performed and corrected at the Contractor’s expense.
     2. Submittals Required with Bid Documents include:
        1. List of references per Part II Section 7
        2. Documentation of Certification of PACP Software
     3. Liability Insurance
        1. The Contractor's commercial general liability limits must be not less than $1,000,000, each occurrence, subject to general aggregate of $1,000,000.
        2. Liability Insurance. Seven (7) days prior to the pre-construction meeting, the Contractor shall submit written evidence that it has obtained commercial general liability limits must be not less than $1,000,000 combined single limit each occurrence/aggregate. Owner shall be named as an additional insured with respect to General Liability, and shall identify additional insured parties, such as the General Contractor, as applicable, with respect to General Liabilities.
     4. Submittals required of the Successful Bidder seven (7) days prior to the Pre- construction Meeting
        1. Name of the project supervisor and resumes
        2. Documentation of NASSCO PACP certification for all CCTV operators, database and software
        3. Site Safety Plan. A complete site safety plan, specific for the project, must be submitted one week prior to the pre-construction meeting. Work will not begin until an approved site safety plan is in place
        4. Sample inspection CCTV data and video or data from other approved inspection method
     5. Submittals Required for the Pre-construction Meeting
        1. An initial comprehensive schedule of work, see Part IV, Paragraph D (To be approved by the Owner)
        2. Management Organization: Provide an organization chart depicting the essential organizational elements and senior personnel of the proposed Contractor and the functions and interrelationships of the personnel proposed to provide technical support, project management and supervision for this project. Provide succinct resumes of the personnel proposed to provide technical support and project management for this project. The personnel designated in the management summary for essential positions shall not be changed except with the permission of Owner. The Owner will only approve such a change when, in its opinion, the substitute personnel have equal or greater qualifications and experience to those intended to be replaced
        3. Proof that Contractor is an approved/bonded Contractor with the Owner
     6. Submittals Required One Week Prior to Any Cleaning & Televising Work
        1. Site specific site safety plan addenda
        2. Entry releases, if applicable
     7. Weekly Submittals
        1. Detailed updates to the work schedule will be provided to the Owner no later than 1:00 p.m. on the Friday preceding the next week's cleaning and televising work
        2. Electronic data and video/scan submittals, logs, and / or electronic worksheets submitted seven (7) days prior to work. All field paperwork must be submitted before the Contractor’s invoice will be processed for payment
        3. Corrections to punch list items as required by the Owner to fulfill the requirements of this specification
     8. Final Submittals Prior to Payment
        1. Corrections to punch list items as required by the Owner to fulfill the requirements of this specification

## PART 2 SPECIAL PROVISIONS

* 1. OWNER RIGHTS
     1. The Owner reserves the right to stop the work when in the Owner’s judgment the Contractor's work or activities are threatening the health and safety of the public or endangering the environment or endangering the waters of the state. Work shall not proceed until a satisfactory resolution has been achieved, according to the Owner.
     2. No Contractor or Subcontractor will perform any work not specifically identified in the work schedule unless approved by the Owner. Notification of such work must be received no later than 8:00 a.m. on the day the work is to be performed. A list of persons available to be notified will be given at the pre-construction meeting.
  2. EMERGENCY RESPONSE

The Contractor shall provide direct contact information to the Owner. These numbers are intended for the Owner’s use in contacting the evening/weekend/holiday emergency work crew for emergencies resulting from the Contractor’s actions or lack thereof during this project. This crew shall be responsible for contacting the Owner within one-half hour after the first verbal and electronic notification. If the Contractor's crew has not responded to the site of the emergency within one hour of the first contact, verbal and electronic, the Owner will make all necessary repairs and bill the Contractor for all work performed. Costs related to the emergency response will be incidental to the contract and not measured for payment.

* 1. WORKING HOURS
     1. The Contractor must complete all work such that no homeowner is without sewer service, unless otherwise directed by the Owner. Local noise ordinances or agencies having control over roadway closures may control starting or stopping operations. Prior to starting operations, the Contractor shall advise the Owner of the restrictions imposed by the local agencies.
     2. The Contractor may be required to work days, nights or weekends to achieve the lowest depth flows in the sewer pipes and not conflict with public events.
     3. No work will be allowed on weekends or holidays except at the discretion of the Owner.
     4. Any weekend or holiday work requests should be submitted to the Owner for review at least 48 hours prior to proposed work.
  2. DECREASE/INCREASE IN SERVICE AND STOP WORK DUE TO INCLEMENT WEATHER

The Owner, at its option, may increase or decrease any or all service requirements provided for under this contract. The Owner further reserves the right to suspend or stop the performance of any or all of the work of this contract due to inclement weather conditions.

* 1. PRE-CONSTRUCTION MEETING
     1. Following award of the contract and before starting any work the Contractor, Job Superintendent/Project Manager, and Crew Leader shall meet with the Owner. The Contractor will be notified of the date, time, and place of the meeting.
     2. Attendance:
        1. Owner
        2. Owner’s Inspector
        3. Engineer
        4. Contractor’s Representative(s)
        5. Major Subcontractors
        6. Major Suppliers
        7. Others, as appropriate
     3. Agenda:
        1. Distribution and Discussion
           1. List of major Subcontractors and Suppliers
           2. Projected Construction Schedules
        2. Critical Work Sequencing
        3. Major Equipment Deliveries and Priorities
        4. Project Coordination
           1. Designation of responsible personnel
        5. Procedures and Processing
           1. Field decisions
           2. Requests for Information
           3. Submittals
           4. Deliverables
        6. Change Orders
           1. Applications for Payment
        7. Procedures for Maintaining Record Documents
        8. Use of Premises
           1. Office, work and storage areas
           2. Owner's requirements
        9. Construction Facilities, Controls and Construction Aids
        10. Procedures for reporting Sanitary Sewer Overflows (SSOs)
        11. Temporary Utilities
  2. CLOSE-OUT PROCEDURES

Progress Meetings: Project closeout will be completed in phases by project. The Owner will hold progress meetings at predetermined intervals, or as determined necessary by the Owner. Items covered in the meetings include the following.

* + - 1. Punch List: This list will detail all items requiring correction, repair, or improvements in order to be accepted. The Contractor will address these items within 7 calendar days or as specified by the Owner. Failure to complete punch list items will result in a stop work notice and delay of payment until completed to the satisfaction of the Owner.
      2. Reports and Submittals: Final reports, post-tapes and other submittals previously described will be finalized and submitted.
      3. Review of the status of pay estimates.
      4. Issue project worksheets, as necessary.
      5. Work scheduling issues.
  1. PRE-QUALIFICATIONS
     1. The successful bidder must have an onsite field supervisor with a minimum three (3) years of experience specializing in the televising of sewers. A foreman for each crew performing television inspection with a minimum of five years of experience specializing in that type of work may be substituted for the onsite field supervisor requirement. The Contractor shall provide the names, titles, phone numbers and addresses of a minimum of two references that can be used to verify this experience. The references must be contract managers or persons of authority over cleaning and televising work performed by the Contractor.
        1. The Contractor shall also provide five (5) similar projects with inspection equipment as proposed for this project.
        2. The Contractor must have foreman or supervisors meeting all pre-qualifications for the duration of the contract.
     2. PACP Requirements
        1. Current NASSCO PACP certification of all CCTV operators, working on this project, will be required for all CCTV work.
        2. Database shall be an NASSCO-PACP (Current Version) Certified Access Database.
        3. CCTV Software shall be NASSCO-PACP (Current Version) certified.
        4. CCTV inspections (Video and Data Collected) will be delivered entirely in digital format.

## PART 3 GENERAL PROVISIONS

* 1. MAINTENANCE OF TRAFFIC
     1. The Contractor shall be responsible for maintaining "local" traffic at all times and for notifying the proper authorities regarding the closing of the roads. The Contractor will be responsible for obtaining all permits required for maintenance of traffic.
     2. The Contractor shall not begin work until standard barricades and warning signs are in an acceptable position and the markers and signs conform to the Federal Highway Administration (FHWA) "Manual of Uniform Traffic Control Devices for Streets and Highways" and all applicable state and local requirements. The Contractor assumes all responsibilities and liabilities regarding strict adherence to applicable sections for the maintenance of traffic and public safety as set forth in the FHWA "Manual of Uniform Traffic Control Devices for Streets and Highways”, and other applicable regulations. All traffic control devices must be in place prior to starting work.
     3. The cost of all traffic control devices shall not be paid separately, but shall be included in the other price items in the contract.
     4. The Contractor shall maintain local traffic at all times during all phases of this project in a manner causing the least amount of inconvenience to the abutting property Owners. Temporary driveways, temporary roadways, or run around as may be necessary to provide vehicular access to and from the abutting properties shall be constructed, maintained, and subsequently removed by the Contractor as directed by the Owner.
     5. The portion of the pavement not affected by the work shall be kept clear of all material and equipment.
     6. The Contractor shall hold harmless the Owner and all its representation from all suits, actions, of claims of any character brought on account of any injuries or damages sustained by any person or persons or property in the performance of this contract.
     7. If at any time traffic has to be blocked (emergencies only), the Contractor shall notify the nearest fire, police departments and service departments.
     8. The cost of maintenance of traffic shall be incidental to the contract and not measured for payment.
  2. EXISTING UTILITIES
     1. The Contractor must take the necessary precautions for the protection of any utility encountered on the project or the restoration of any utility damaged during the work.
     2. If an excavation is required, the Contractor shall notify, at least 48 hours before breaking ground, all public or private service corporations having wire, poles, pipes, conduit, manholes, or other structures that may be affected by this operation, including all structures which are affected and not shown on these plans. Owners of underground utilities, which are members of the state’s one call service, can be notified by calling. Non-member underground utility Owners must be called directly.
     3. All maintenance, repair, and replacement of existing utilities shall be in accordance with the rules and regulations of the various utility companies having jurisdiction.
     4. All existing storm sewers, driveway drains, surface drain pipes and other property, removed or damaged during construction shall be repaired and reconnected by the Contractor as directed by the Owner at no additional cost to the Owner.
  3. REQUEST FOR SUPPLEMENTARY INFORMATION
     1. It shall be the responsibility of the Contractor to make timely requests of the Owner for supplemental information, which should be furnished by the Owner under the terms of this contract, and as required in the planning and execution of the work. Such requests may be submitted from time to time as the need approaches, but each shall be filed in ample time to permit appropriate action to be taken by all parties involved to avoid delay.
     2. Each request shall be in writing, and list the various items and the latest day by which each will be required by the Contractor. The first list shall be submitted within two (2) weeks after contract award and shall be as complete as possible at that time. The Contractor shall, if required, furnish promptly any assistance and information the Owner may require in responding to these requests of the Contractor. The Contractor shall be fully responsible for all delays arising from failure to comply with this section.
  4. USE OF PREMISES
     1. The Contractor shall not trespass upon or in any way disturb private property without first obtaining written permission from the property Owner and/or Owner or Prime Contractor as appropriate to do so. A copy of such written permission shall be furnished to the Owner prior to accessing the site.
     2. It shall be the Contractor's responsibility to work equipment around poles, trees, or other obstructions and to do so at his own expense.
     3. If the Contractor finds it necessary to obtain additional working area, it shall be the Contractor's responsibility for its acquisition The Contractor shall, at no additional expense, restore such property to the original condition in the sole and unfettered opinion of the system Owner. The Contractor must take photographs and/or videos of existing properties prior to disturbance of each property, and make a copy available to the system Owner.
     4. All items within the street right-of-way or sewer easement shall be removed, or removed and replaced, or restored as directed by the Owner.
     5. The Contractor shall ensure all employees have a badge or visible identification during any time that they on the project site or within private property. This identification must be worn so that it is readily recognized and readable to the public.
  5. PROTECTION OF TREES

The Contractor shall avoid any unnecessary damage to trees. Branches which overhang the project limits and which interfere with the operation of equipment shall be tied back to avoid damage, if possible. Where injury to branches is unavoidable, the branches shall be sawed off neatly at the trunk or main branch. The Contractor at no additional expense shall remove any trees damaged beyond saving, and make restitution to the Owner (public or private).

* 1. FENCING

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

* 1. RESTORATION
     1. All roadway berms and drainage ditches disturbed by the work shall be restored, reshaped, and graded to drain.
     2. Pavement restoration, if necessary, shall conform to the Owner's regulations, or the Owner's Specifications depending upon who has jurisdiction for the street. Trench backfill and compaction shall be in conformance with the local street restoration jurisdiction.
     3. The remediation of sunken trenches caused by activities conducted in this contract shall be the Contractor's responsibility. Sunken areas shall be backfilled and compacted to meet adjoining grades; the surface shall be re-seeded or resurfaced with asphalt or concrete matching the existing surfacing.
     4. The Contractor shall restore unpaved areas by seeding and mulching. No direct payment will be made for seeding and mulching.
     5. Driveways shall be restored in accordance with Owner's regulations, or the Owner's Specifications depending upon who has jurisdiction for the driveway.
     6. All disturbed areas shall be restored as nearly as possible to their original condition.
     7. All restoration shall be completed in strict accordance with the appropriate items of the specifications as directed by the Owner.
     8. The cost of all restoration of streets, drives, walks; sod, etc. shall be incidental to the contract and not measured for payment.
     9. Restoration shall be kept current with the project work. Failure to keep restoration of these items completed reasonably close shall result in a stop work notice and delay of payment until such restoration is completed to the satisfaction of the Owner.
  2. CLEANUP

The Contractor shall keep the work area in an uncluttered condition by the frequent removal of debris. The Contractor shall remove all debris and unused material and leave the area in a condition similar to the condition of the area before any work was performed.

* 1. PROPERTY DAMAGE
     1. The Contractor shall immediately investigate any and all reports of sewage backing up into fixtures served by the sewer section that is being cleaned or televised.
     2. The Contractor will be required to notify the Owner immediately if he causes any damage to private or public property caused by activities related to this contract. The Contractor shall make repairs and/or clean the property immediately in a timeframe that is acceptable to the Owner.
  2. ACCESS TO MUNICIPAL WATER SUPPLIES
     1. The Contractor will be required to rent a hydrant meter from the Owner for access to the municipal water supply. Please contact JWSC Meter Services Manager Kalem Head at 912-261-7103 to rent a hydrant meter. An initial deposit of $2,000 which will be refunded when the project is completed and the meter returned to JWSC.
     2. The cost of water should not be billed separately, but shall be included in the other prices/items in the contract.

## PART 4 EXECUTION

* 1. GENERAL
     1. The Contractor shall furnish and maintain, in good condition, all cleaning and televising equipment necessary for proper execution of the work.
     2. Maintaining Flow: It will be the responsibility of the Contractor, throughout the tenure of this contract, to provide and maintain sufficient flow at all times to pass any flash of storm flow of drainage ditches and prevent any backwater flooding due to obstruction caused by cleaning or CCTV equipment.
     3. Retrieval of Materials and Equipment: It shall be the Contractor's responsibility to remove materials and equipment that has been lodged in the sewer from cleaning, television inspection, or point repair excavations.
     4. Work Schedule. This schedule shall outline the sequence in which the Contractor proposes to conduct his operations and shall be approved by the Owner before work is started. The Contractor shall use a time-scaled logic diagram format. The level of detail of activities shall provide clear, concise communication of the plan of work. At a minimum, activities showing initial mobilization, start-up, cleaning and televising, and any resultant point repairs shall be included.
     5. Original and updated schedules must be provided to the Owner in writing. The software used for producing the schedules must have the capability to tailor the form and format of schedules, and accompanying reports, to the Owner’s requirements.
     6. The Owner may require additional updates to the schedule as changes occur. These additional updates will be submitted to the Owner within 48 hours of the request. Changes to the schedule are subject to approval of the Owner.
  2. TELEVISION INSPECTION AND COMPUTERIZED EQUIPMENT
     1. The Contractor shall use a color pan and tilt camera or a side wall scanning (panoramic) camera specifically designed and constructed for sewer inspection. Each sewer to be televised shall be suitably isolated to control flow during the inspection. The Contractor shall provide a recording of the televised sewer inspection, locating each sewer service connection entering the sewer.
     2. Lighting for the pan and tilt camera or side wall scanning camera shall provide a clear picture of the entire periphery of the existing sewer.
     3. The pan and tilt camera shall pause, pan, and visually inspect all service connections, pipe ends, and maintenance or structural defects. If utilizing a camera with side wall scanning capabilities, pausing and panning of each lateral is not necessary during the inspection if the image clearly depicts the inside of the lateral for post processing. If a blockage cannot be removed and hampers the televising of the sewer in one direction then the Contractor shall attempt to complete the section by televising from the other manhole to complete the section, this reversal should immediately follow the initial direction. The Contractor must immediately report the obstruction to the Owner.
     4. Side wall scanning inspection systems are imaging cameras that are capable of a continuous 360 degree image capture of the wall of the pipeline being inspected. These systems may have one or multiple cameras to capture the complete interior view of the pipeline. Due to the high resolution of the image quality, the inspections may be conducted at a higher speed than color pan and tilt CCTV method. Once the pipeline inspections are completed, the captured images can be linked with a companion software package that allows for identifying and coding defects and features in the pipeline. Typically these systems provide a fold flat view and a perspective view (typical of CCTV) of the pipeline.
     5. If the image quality is not adequate for post-inspection coding, the Contractor shall be required to repeat the survey at the Contractor’s expense.
     6. The Contractor shall perform all CCTV inspections in accordance with NASSCO’s Pipeline Assessment Certification Program (PACP). CCTV inspections will be delivered entirely in electronic format. The entire survey shall be recorded in an approved electronic format submitted with electronic links between the data and the video. All television inspection reports shall be with-in +/- two (2) feet of the measured linear footage between manholes along the existing sewer centerline from the start of pipe to end of pipe. All Owner and PACP required header information must be fully and accurately entered on all CCTV reports. Work not following these specifications may be rejected for payment and the Contractor may be required to re do the work.
     7. The Contractor shall provide a PACP certified operator on site at all times during the entire survey. If video is to be coded separately from the actual recording, both the onsite Operator and the individual performing the PACP coding shall be PACP certified. The Contractor shall provide proof of certification prior to commencement of work, prior to a change in personnel involved in data collection, and as requested by the Owner.
     8. CCTV Reports, logs, electronic reports, and worksheets must include the following information and conform to the applicable guidelines:
        1. CCTV Reports, NASSCO PACP Certified Database, and electronic worksheets must accompany all inspection work.
        2. All Owner and NASSCO PACP required header information must be fully and accurately entered on all CCTV reports.

## PART 5 PAYMENT FOR WORK

* 1. MEASUREMENT AND PAYMENT
     1. In cases where the sewer is entirely inspected manhole-to-manhole, payments will be based on the measured linear footage between manholes along the existing sewer centerline from manhole wall to manhole wall at the unit price submitted on the unit price page.
     2. All invoicing will be by sewer segment, and payment and will be made when all punch list items and rework are completed for each Sewer Segment. Additional work shall be invoiced and paid upon completion.
     3. The following items of work will not be measured for payment but the cost thereof will be considered as incidental to the contract:
        1. Data entry, computerized equipment, software, and hardware to submit the required electronic submittals, including the DVDs, records, and logs.
        2. Completion of all electronic forms.
        3. Photographic equipment and supplies used to show sewer pipe and manhole defects.
        4. Bypass pumping and flow control where required by the Contractor to perform his or her work.
        5. Providing temporary and final paving at any proposed excavations.
        6. Providing temporary and final restoration of grass areas.
        7. Emergency after-hours response.
        8. Re-televising and re-cleaning following a point repair completed by the Contractor.
        9. Demobilization and mobilization because of suspension of work.
        10. Updates to the schedule as required by the Owner.
        11. Right of entry access to private property.
        12. Dye testing of service connections in order to meet the CCTV specification.
     4. In order for the Owner to properly and accurately track costs of the contract, the Contractor shall submit the final invoice on each project within 30 days after the completion of the project.
     5. Performance and Payment Bond: The bond securing the performance of the contract shall be effective for the full maximum period of the contract including the optional renewal period(s) specified. The bond amount indicated shall be deemed adequate surety for the initial and optional renewal periods. The cost of performance surety shall be treated as an overhead expense and shall be included in the bid amounts. The Owner shall not pay the cost of surety as a direct bill item.

\*\*END OF SECTION\*\*

**Index to**

**Section 03000 – CURED-IN-PLACE PIPE (CIPP) INSTALLATION**

[PART 1 GENERAL 40](#_bookmark0)

* 1. [DESCRIPTION OF WORK AND PRODUCT DELIVERY 40](#_bookmark1)
  2. [REFERENCES 41](#_bookmark2)
  3. [PERFORMANCE WORK STATEMENT (PWS) SUBMITTAL 4](#_bookmark3)2
  4. [PRODUCT SUBMITTALS 44](#_bookmark4)
  5. [SAFETY 44](#_bookmark5)
  6. [QUALITY CONTROL PLAN (QCP) 45](#_bookmark6)
  7. [CIPP REPAIR/REPLACEMENT 46](#_bookmark7)
  8. [AS-BUILT DRAWINGS/RECORDS 46](#_bookmark8)
  9. [WARRRANTY 46](#_bookmark9)

[PART 2 PRODUCTS 47](#_bookmark10)

* 1. [MATERIALS 47](#_bookmark11)
  2. [FABRIC TUBE 47](#_bookmark12)
  3. [RESIN 48](#_bookmark13)
  4. [STRUCTURAL REQUIREMENTS 49](#_bookmark13)
  5. [[MINIMUM PHYSICAL PROPERTIES 49](#_bookmark14)](#_bookmark13)

[PART 3 INSTALLATION 50](#_bookmark10)

* 1. [CONSTRUCTION REQUIREMENTS 50](#_bookmark1)
  2. [INSTALLATION OF LINER 52](#_bookmark2)
  3. [COOL DOWN](#_bookmark3) 53
  4. [FINISH 53](#_bookmark4)
  5. [FLOWABLE FILL OF VOID AREAS 54](#_bookmark5)
  6. [MANHOLE CONNECTIONS AND RECONNECTIONS OF EXISTING SERVICES 54](#_bookmark6)
  7. [TESTING OF INSTALLED CIPP 55](#_bookmark7)
  8. [FINAL ACCEPTANCE 56](#_bookmark8)

# PART 1 GENERAL

1. This PSG includes the minimum requirements for the rehabilitation of sanitary sewer pipelines by the installation of Cured-In-Place Pipe (CIPP) within the existing, deteriorated pipe as shown on the exhibits included as part of these contract documents.
2. The rehabilitation of pipelines shall be done by the installation of a resin-impregnated flexible tube which, when cured, shall be continuous and tight-fitting throughout the entire length of the original pipe. The CIPP shall extend the full length of the original pipe and provide a structurally sound, jointless and water-tight new pipe-within-a-pipe. The Contractor is responsible for proper, accurate and complete installation of the CIPP using the system selected by the Contractor meeting the Owners requirements.
3. Neither the CIPP product, system, nor its installation, shall cause adverse effects to any of the Owner’s processes or facilities. The installation pressure for the product shall not damage the system in any way, and the use of the product shall not result in the formation or production of any detrimental compounds or by-products at the wastewater treatment plant. The Contractor shall notify the Owner and identify any by-products produced as a result of the installation operations, test and monitor the levels, and comply with any and all local waste discharge requirements. The Contractor shall cleanup, restore existing surface conditions and structures, and repair any of the CIPP system determined to be defective. The Contractor shall conduct installation operations and schedule cleanup in a manner to cause the least possible obstruction and inconvenience to traffic, pedestrians, businesses and property owners or tenants.
4. The prices submitted by the Contractor, shall include all costs of permits, labor, equipment and materials for the various bid items necessary for furnishing and installing, complete in place, CIPP in accordance with these specifications. All items of work not specifically mentioned herein which are required, by the contractor, to make the product perform as intended and deliver the final product as specified herein shall be included in the respective lump sum and unit prices bid.
   1. DESCRIPTION OF WORK AND PRODUCT DELIVERY
      1. This PSG covers all work necessary to furnish and install the CIPP. The Contractor shall provide all materials, labor, equipment, and services necessary for traffic control, bypass pumping and/or diversion of flows, cleaning and television inspection of sewers to be rehabilitated, liner installation, reconnection of service connections, all quality controls, provide samples for performance of required material tests, final television inspection, testing of the rehabilitated pipe system, warranty work and other work, all as specified herein.
      2. The product furnished shall be a complete CIPP system including specific materials, applicable equipment and installation procedures. The CIPP system manufacturer may submit, a minimum of 14 calendar days in advance of the bid date, required information to the Owner to obtain pre-approval status. Those CIPP systems that have been pre-approved will not be required to furnish information as required in the submittal section of these specifications unless specifically requested to do so by the Owner or if any of the CIPP system components have changed from those pre- approved by the Owner. All other CIPP systems or multi-component products will be required to meet the submittal requirements as contained herein.
      3. The CIPP shall be continuous and jointless from manhole to manhole or access point to access point and shall be free of all defects that will affect the long-term life and operation of the pipe.
      4. The CIPP shall fit sufficiently tight within the existing pipe so as to not leak at the manholes, at the service connections or through the wall of the installed pipe. If leakage occurs at the manholes or the service connections, the Contractor shall seal these areas to stop all leakage using a material compatible with the CIPP as directed by the Owner at the price bid in the Proposal. If leakage occurs through the wall of the pipe, the CIPP shall be repaired or removed as recommended by the CIPP manufacturer. Final approval of the CIPP will be based on a leak tight pipe.
      5. The CIPP shall be designed for a life of 50 years or greater and an equal service life unless specifically specified otherwise by the Owner.
      6. The CIPP shall be designed fully structural stand-alone pipe-within-a-pipe. The installed CIPP shall be a structurally designed pipe-within-a-pipe, meet or exceed all contract specified physical properties, fitting tightly within the existing pipe all within the tolerances specified. The installed CIPP shall withstand all applicable surcharge loads (soil overburden, live loads, etc.) and external hydrostatic (groundwater) pressure, if present, for each specific installation location.
      7. The installed CIPP shall have a long term (50 year) corrosion resistance to the typical chemicals found in domestic sewage and defined in the referenced and applicable ASTM standards
      8. All existing and confirmed active service connections and any other service laterals to be reinstated, as directed by the Owner, shall be re-opened robotically or by hand in the case of man-entry size piping, to their original shape and to 90% - 95% of their original area. All over-cut or under-cut service connections will be properly repaired to meet the requirements of these specifications at no additional cost to the Owner.
      9. All materials furnished, as part of this contract shall be marked with detailed product information, stored in a manner specified by the manufacturer and tested to the requirement of this contract.
      10. Testing of cured liners shall be executed by the Contractor with results provided to the Owner prior to project close-out. Warranty inspections shall be executed by the Owner. Any defects found shall be repaired or replaced by the Contractor at no cost to the Owner.
      11. The Contractor shall furnish, from the project installation, additional samples for product testing at the request of the Owner. The Owner shall take possession of the additional samples for testing and shall maintain the chain of custody, deliver the samples to an approved laboratory and pay for all material and product testing performed in addition to required testing by the Contractor in accordance with these Specifications.
   2. REFERENCES
      1. The following documents form a part of this specification to the extent stated herein and shall be the latest editions thereof. Where differences exist between codes and standards, the requirements of these specifications shall apply. All references to codes and standards shall be to the latest revised version.

ASTM - F1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube

ASTM - F1743 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pull in and Inflate and Curing of a Resin-Impregnated Tube

ASTM - D543 Standard and Practice for Evaluating the Resistance of Plastics to Chemical Reagents

ASTM - D638 Standard Test Method for Tensile Properties of Plastics

ASTM - D790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

ASTM - D792 Standard Test Methods for Density and Specific Gravity of Plastics by Displacement.

ASTM - F2019 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pulled in Place Installation of Glass Reinforced Plastic (GRP) Cured-in-Place Thermosetting Resin Pipe (CIPP)

ASTM - D2122 Standard Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

ASTM F2561 Standard Practice for Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner

ASTM - D2990 Standard Test Methods for Tensile, Compressive, and Flexural Creep and Creep-Rupture of Plastics

ASTM - D3567 Standard Practice for Determining Dimensions of Fiberglass (Glass- Fiber-Reinforced Thermosetting Resin) Pipe and Fittings

ASTM - D3681 Standard Test Method for Chemical Resistance of “Fiberglass (Glass Fiber Reinforced Thermosetting Resin) Pipe in a Deflected Condition

ASTM - D5813 Standard Specification for Cured-in Place Thermosetting Resin Sewer Pipe

* 1. PERFORMANCE WORK STATEMENT (PWS) SUBMITTAL
     1. The Contractor shall submit, to the Owner a Performance Work Statement (PWS) which clearly defines the CIPP product delivery in conformance with the requirements of these contract documents. Unless otherwise directed by the Owner, the PWS shall at a minimum contain the following:
     2. Clearly indicate that the CIPP will conform to the project requirements as outlined in the Description of Work and as delineated in these specifications.
     3. Where the scope of work is specifically delineated in the contract documents, a detailed installation plan describing all preparation work, cleaning operations, pre- CCTV inspections, bypass pumping, traffic control, installation procedure, method of curing, service reconnection, quality control, testing to be performed, final CCTV inspection, warrantees furnished and all else necessary and appropriate for a complete liner installation. A detailed installation schedule shall be prepared, submitted and conform to the requirements of this contract.
     4. Contractor’s description of the proposed CIPP technology, including a detailed plan for identifying all active service connections maintaining service, during mainline installation, to each home connected to the section of pipe being lined, including temporary service for commercial, industrial and apartment complexes, if required by the contract.
     5. A description of the CIPP materials to be furnished for the project. Materials shall be fully detailed in the submittals and conform to these specifications and/or shall conform to the pre-approved product submission.
     6. A statement of the Contractors experience. The Contractor shall have a minimum of three (3) years of continuous experience installing CIPP in pipe of a similar size, length and configuration as contained in this contract. A minimum of 150,000 linear feet of shop wet-out liner installation is required and minimum of 6 onsite wet-out installations are required as specifically applicable to this contract. The lead personnel including the superintendent, the foreman and the lead crew personnel for the CCTV inspection, resin wet-out, the liner installation, liner curing and the robotic service reconnections each must have a minimum of three (3) years of total experience with the CIPP technology proposed for this contract and must have demonstrated competency and experience to perform the scope of work contained in this contract. The name and experience of each lead individual performing work on this contract shall be submitted with the PWS. Personnel replaced by the contractor, on this contract, shall have similar, verifiable experience as the personnel originally submitted for the project
     7. Engineering design calculations, in accordance with the Appendix of ASTM F1216, for each length of liner to be installed including the thickness of each proposed CIPP. It will be acceptable for the Contractor to submit a design for the most severe line condition and apply that design to all of the line sections. These calculations shall be performed and certified by a qualified, Professional Engineer. All calculations shall include data that conforms to the requirements of these specifications or has been pre- approved by the Owner.
     8. Proposed manufacturers technology data shall be submitted for all CIPP products and all associated technologies to be furnished.
     9. Submittals shall include information on the cured-in-place pipe intended for installation and all tools and equipment required for a complete installation. The PWS shall identify which tools and equipment will be redundant on the job site in the event of equipment breakdown. All equipment to be furnished for the project, including proposed back-up equipment, shall be clearly described. The Contractor shall outline the mitigation procedure to be implemented in the event of key equipment failure during the installation process.
     10. A detailed description of the Contractor’s proposed procedures for removal of any existing blockages in the pipeline that may be encountered during the cleaning process.
     11. A detailed public notification plan shall be prepared and submitted including detailed staged notification to residences affected by the CIPP installation.
     12. An odor control plan shall be submitted, by the contractor, that will ensure that project specific odors will be minimized at the project site and surrounding area.
     13. Compensation for all work required for the submittal of the PWS shall be included in the various pipelining items contained in the Proposal.
  2. PRODUCT SUBMITTALS
     1. Fabric Tube – including the manufacturer and description of product components such as felts and reinforcing materials.
     2. Flexible membrane (coating) material – including materials specific to the proposed curing method and recommended repair (patching) procedure if applicable.
     3. Raw Resin Data - including the manufacturer and description of product components including the Spectroscopic Wavelength diagram for the resin being furnished
     4. Manufacturers’ shipping, storage and handling recommendations for all components of the CIPP system.
     5. All Safety Data Sheets (SDS) for all materials to be furnished for the project.
     6. Tube wet-out & cure method including:
        1. A complete description of the proposed wet-out procedure for the proposed technology.
        2. The Manufacturer’s recommended cure method for each diameter and thickness of liner to be installed. The PWS shall contain a detailed curing procedure outlining the curing medium, the method of application and how the curing temperatures will be monitored.
     7. Compensation for all work required for the submittal of product data shall be included in the Lump Sum price contained in the Proposal for Mobilization.
  3. SAFETY
     1. The Contractor shall conform to all work safety requirements of pertinent regulatory agencies, and shall secure the site for the working conditions in compliance with the same. The Contractor shall erect such signs and other devices as are necessary for the safety of the work site.
     2. The Contractor shall perform all of the Work in accordance with applicable OSHA standards. Emphasis shall be placed upon the requirements for entering confined spaces and with the equipment being utilized for pipe renewal.
     3. The Contractor shall submit a proposed Safety Plan to the Owner, prior to beginning any work, identifying all competent persons. The plan shall include a description of a daily safety program for the job site and all emergency procedures to be implemented in the event of a safety incident. All work shall be conducted in accordance with the Contractor’s submitted Safety Plan.
     4. Compensation for all work required for the submittal of the Safety Plan shall be included in the various pipelining items contained in the Proposal.
  4. QUALITY CONTROL PLAN (QCP)
     1. A detailed quality control plan (QCP) shall be submitted to the Owner that fully represents and conforms to the requirements of these specifications. At a minimum the QCP shall include the following:
        1. A detailed discussion of the proposed quality controls to be performed by the Contractor.
        2. Defined responsibilities, of the Contractor’s personnel, for assuring that all quality requirements for this contract are met. These shall be assigned, by the Contractor, to specific personnel.
        3. Proposed procedures for quality control, product sampling and testing shall be defined and submitted as part of the plan.
        4. Proposed methods for product performance controls, including method of and frequency of product sampling and testing both in raw material form and cured product form.
        5. Scheduled performance and product test result reviews between the Contractor and the Owner at a regularly scheduled job meeting.
        6. Inspection forms and guidelines for quality control inspections shall be prepared in accordance with the standards specified in this contract and submitted with the QCP.
     2. Compensation for all work required for the submittal of the QCP shall be included in the various pipelining items contained in the Proposal.
  5. CIPP REPAIR/REPLACEMENT
     1. Occasionally installations will result in the need to repair or replace a defective CIPP. The Contractor shall outline specific repair or replacement procedures for potential defects that may occur in the installed CIPP. Repair/replacement procedures shall be as recommended by the CIPP system manufacturer and shall be submitted as part of the PWS.
     2. Defects in the installed CIPP that will not affect the operation and long term life of the product shall be identified and defined.
     3. Repairable defects that may occur in the installed CIPP shall be specifically defined by the Contractor based on manufacturer’s recommendations, including a detailed step-by-step repair procedure, resulting in a finished product meeting the requirements of these contract specifications.
     4. Unrepairable defects that may occur to the CIPP shall be clearly defined by the Contractor based on the manufacturer’s recommendations, including a recommended procedure for the removal and replacement of the CIPP.
  6. AS-BUILT DRAWINGS/RECORDS
     1. As-Built drawings/records, pre & post inspection videotapes, CDs or other electronic media shall be submitted to the Owner, by the Contractor, within 2 weeks of final acceptance of said work or as specified by the Owner. As-Built drawings/records will include the identification of the work completed by the Contractor and shall be prepared on one set of Contract Drawings/Records provided to the Contractor at the onset of the project.
     2. As-Built drawings/records shall be kept on the project site at all times, shall include all necessary information as outlined in the PWS or as agreed to by the Owner and the Contractor at the start of the Contract, shall be updated as the work is being completed and shall be clearly legible.
     3. Compensation for all work required for the submittal and approval of As-Built drawings/records shall be included in the various pipelining items contained in the Proposal.
  7. WARRANTY
     1. The materials used for the project shall be certified by the manufacturer for the specified purpose. The Contractor shall warrant the CIPP material and installation for a period of one (1) year. During the Contractor warranty period, any defect which may materially affect the integrity, strength, function and/or operation of the pipe, shall be repaired at the Contractor’s expense in accordance with procedures included in Section 1.7 CIPP Repair/Replacement and as recommended by the manufacturer.
     2. On any work completed by the contractor that is defective and/or has been repaired, the contractor shall warrant this work for (1) year in addition to the warrantee required by the contract.
     3. After a pipe section has been rehabilitated and for a period of time up to one (1) year following completion of the project, the Owner may inspect all or portions of the rehabilitated system. The specific locations will be selected at random by the Owner’s inspector and should include all sizes of CIPP from this project. If it is found that any of the CIPP has developed abnormalities since the time of "Post Construction Television Inspection," the abnormalities shall be repaired and/or replaced as defined in Section 1.7 CIPP Repair/Replacement and as recommended by the manufacturer. If, after inspection of a portion of the rehabilitated system under the contract, problems are found, the Owner may televise all the CIPP installed on the contract. All verified defects shall be repaired and/or replaced by the Contractor and shall be performed in accordance with Section 1.7 CIPP Repair/Replacement and per the original specifications, all at no additional cost to the Owner.

# PART 2 PRODUCTS

* 1. MATERIALS
     1. The CIPP System must meet the chemical resistance requirements of these contract documents.
     2. All materials shipped to the project site shall be accompanied by test reports certifying that the material conforms to the ASTM standards listed herein. Materials shall be shipped, stored, and handled in a manner consistent with written recommendations of the CIPP system manufacturer to avoid damage. Damage includes, but is not limited to, gouging, abrasion, flattening, cutting, puncturing or ultra-violet (UV) degradation. On site storage locations shall be approved by the Owner. All damaged materials shall be promptly removed from the project site at the Contractor’s expense and disposed of in accordance with all current applicable agency regulations.
  2. FABRIC TUBE
     1. The fabric tube shall consist of one or more layers of absorbent non-woven felt fabric, felt/fiberglass, felt/carbon fiber, carbon fiber or fiberglass and meet the requirements of ASTM F 1216, ASTM F 1743, or ASTM F2019 and ASTM D5813. The fabric tube shall be capable of absorbing and carrying resins, constructed to withstand installation pressures and curing temperatures and have sufficient strength to bridge missing pipe segments and stretch to fit irregular pipe sections. The contractor shall submit certified information from the felt manufacturer on the nominal void volume in the felt fabric that will be filled with resin.
     2. The wet-out fabric tube shall have a uniform thickness and excess resin distribution that when compressed at installation pressures will meet or exceed the design thickness after cure.
     3. The fabric tube shall be manufactured to a size and length that when installed will tightly fit the internal circumference, meeting applicable ASTM standards or better, of the original pipe. Allowance shall be made for circumferential stretching during installation. The tube shall be properly sized to the diameter of the existing pipe and the length to be rehabilitated and be able to stretch to fit irregular pipe sections and negotiate bends. The Contractor shall determine the minimum tube length necessary to effectively span the designated run between manholes. The Contractor shall verify the lengths in the field prior to ordering and prior to impregnation of the tube with resin to ensure that the tube will have sufficient length to extend the entire length of the run. The Contractor shall also measure the inside diameter of the existing pipelines in the field prior to ordering liner so that the liner can be installed in a tight-fitted condition.
     4. The outside and/or inside layer of the fabric tube (before inversion/pull-in, as applicable) shall be coated with an impermeable, flexible membrane that will contain the resin and facilitate, if applicable, vacuum impregnation and monitoring of the resin saturation during the resin impregnation (wet-out) procedure.
     5. No material shall be included in the fabric tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be acceptable upon visual inspection as evident by color contrast between the tube fabric and the activated resin containing a colorant.
     6. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made. The hue of the color shall be dark enough to distinguish a contrast between the fully resin saturated felt fabric and dry or resin lean areas.
     7. Seams in the fabric tube, if applicable, shall meet the requirements of ASTM D5813.
     8. The outside of the fabric tube shall be marked a maximum of every 5 feet with the name of the manufacturer or CIPP system, manufacturing lot and production footage.
     9. The minimum length of the fabric tube shall be that deemed necessary by the installer to effectively span the distance from the starting manhole to the terminating manhole or access point, plus that amount required to run-in and run-out for the installation process.
     10. The nominal fabric tube wall thickness shall be constructed, as a minimum, to the nearest 0.5 mm increment, rounded up from the design thickness for that section of installed CIPP. Wall thickness transitions, in 0.5 mm increments or greater as appropriate, may be fabricated into the fabric tube between installation entrance and exit access points. The quantity of resin used in the impregnation shall be sufficient to fill all of the felt voids for the nominal felt thickness.
  3. RESIN
     1. The resin shall be a corrosion resistant polyester or vinyl ester resin and catalyst system or epoxy and hardener system that, when properly cured within the tube composite, meets the requirements of ASTM F1216, ASTM F1743 or F2019 and ASTM D5813, the physical properties herein, and those which are to be utilized in the design of the CIPP for this project. The resin, specified for the specific application defined in the contract documents, shall produce CIPP which will comply with or exceed the structural and chemical resistance requirements of this specification.
     2. The resin to tube ratio, by volume, shall be furnished as recommended by the manufacturer.
  4. STRUCTURAL REQUIREMENTS
     1. The physical properties and characteristics of the finished CIPP will vary considerably, depending on the types and mixing proportions of the materials used and the degree of cure executed. It shall be the responsibility of the Contractor to control these variables and to provide a CIPP system which meets or exceeds the minimum properties specified herein.
     2. The CIPP shall be designed as per ASTM F1216 Appendixes. The CIPP design shall assume no bonding to the original pipe wall.
     3. The design engineer shall set the long-term (50 year extrapolated) Creep Retention Factor at 50% of the initial design flexural modulus as determined by ASTM D790 test method. This value shall be used unless the Contractor submits long-term test data (ASTM D2990) to substantiate a higher retention factor.
     4. The cured pipe material (CIPP) shall, at a minimum, meet or exceed the structural properties, as listed below.

|  |  |  |  |
| --- | --- | --- | --- |
| Property | Test Method | Cured Composite Per  ASTM F1216 | Cured Composite Per Design |
| Flexural Modulus of Elasticity (Short-Term) Felt Tubes.  Felt/Fiberglass, Fiberglass as recommended by the Manufacturer | ASTM D790 | 250,000 psi | Contractor Value |
| Flexural Strength (Short-Term) Felt Tubes.  Felt/Fiberglass, Fiberglass as recommended by the Manufacturer | ASTM D790 | 4,500 psi | Contractor Value |

* 1. MINIMUM PHYSICAL PROPERTIES
     1. The required structural CIPP wall thickness shall be based, as a minimum, on the physical properties of the cured composite and per the design of the Professional Engineer (see section 1.3.G) and in accordance with the Design Equations contained in the appendix of ASTM F1216, and the following design parameters:

|  |  |
| --- | --- |
| Design Safety Factor | 2.0 (1.5 for pipes 36'' or larger, if applicable) |
| Creep Retention Factor | 50% |
| Ovality | 2% or as measured by field inspection |
| Constrained Soil Modulus | Per AASHTO LRFD Section 12 and AWWA Manual M45 |
| Groundwater Depth | As specified or indicated on the Plans |
| Soil Depth (above the crown) | As specified or indicated on the Plans |
| Live Load | Highway, railroad or airport as applicable |
| Soil Load (assumed) | 120 lb./cu. ft. |
| Minimum Service Life | 50 years |

* + 1. The Contractor shall submit, prior to installation of the lining materials, certification of compliance with these specifications and/or the requirements of the pre-approved CIPP system. Certified material test results shall be included that confirm that all materials conform to these specification and/or the pre-approved system. Materials not complying with these requirements will be rejected.
    2. The design soil modulus may be adjusted based on data, determined from detailed project soil testing results, as provided by the Owner in the contract documents.

# PART 3 INSTALLATION

* 1. CONSTRUCTION REQUIREMNTS
     1. Preparation, cleaning, inspection, flow bypassing and public notification. The Contractor shall clean the interior of the existing host pipe prior to installation of the liner. All debris and obstructions disposed of.
     2. The liner shall be constructed of materials and methods that, when installed, shall provide a jointless and continuous structurally sound CIPP able to withstand all imposed static, and dynamic loads on a long-term basis.
     3. The Contractor may, under the direction of the Owner, utilize any of the existing manholes in the project area as installation access points. If a street must be closed to traffic because of the location of the sewer, the Contractor shall furnish a detailed traffic control plan and all labor and equipment necessary. The plan shall be in conformance with the requirements of the local agency having jurisdiction over traffic control.
     4. Cleaning of Pipe Lines – Before ordering liner materials for the project, the Contractor shall remove all internal debris from the pipe line, as required in these specifications, and accurately measure and document the exact size of the existing pipeline to be rehabilitated. Solid debris and deposits shall be removed from the system and disposed of properly by the Contractor. Moving material from manhole section to manhole section shall not be allowed. As applicable, the contractor shall either plug or install a flow bypass pumping system to properly clean the pipe lines. Precaution shall be taken by the Contractor in the use of cleaning equipment to avoid damage to the existing pipe. The repair of any damage, caused by the cleaning equipment, shall be the responsibility of the Contractor. The Owner will designate a site for the disposal of all debris removed from the Owner’s sewer system as a direct result of the cleaning operation. Unless otherwise specified by the Owner, the Contractor shall dispose of all debris at no charge. Should any dumping fees apply, the Contractor shall be compensated at the respective unit price bid in the Proposal for cleaning.
     5. Bypassing Existing Flows - The Contractor shall provide for the flow of existing mainline and service connection effluent around the section or sections of pipe designated for CIPP installation. With most small diameter pipelines, particularly on terminal sewers, plugging will be adequate but must be monitored on a regular basis to prevent backup of sewage into adjacent homes. Service connection effluent may be plugged only after proper notification to the affected residence and may not remain plugged overnight. Installation of the liner shall not begin until the Contractor has installed the required plugs or a sewage bypass system and all pumping facilities have been installed and tested under full operating conditions including the bypass of mainline and side sewer flows. Once the installation has begun, existing flows shall be maintained, until the resin/tube composite is fully cured, cooled down, full televised and the CIPP ends finished. The Contractor shall coordinate sewer bypass and flow interruptions with the Owner at least 14 days in advance and with the property owners and businesses at least 1 business day in advance. The pump and bypass lines shall be of adequate capacity and size to handle peak flows. The Contractor shall submit a detail of the bypass plan and design to the Owner for approval before proceeding with any CIPP installation. Compensation for bypass pumping and all associated plans and approvals shall be at the price bid in the Proposal. The table below outlines nominal bypassing requirements for specified pipe diameters:

|  |  |
| --- | --- |
| Diameter | Nominal Bypass Requirements (gpm) |
| 8" | 400 |
| 10" | 650 |
| 12" | 900 |

* + 1. Contractor shall perform post-cleaning video inspections of the pipelines. Only PACP certified personnel trained in locating breaks, obstacles and service connections by closed circuit television shall perform the inspection. The Contractor shall provide the Owner a copy of the pre-cleaning and post-cleaning video and suitable log, and/or in digital format, for review prior to installation of the CIPP and for later reference by the Owner.
    2. Line Obstructions - It shall be the responsibility of the Contractor to clear the line of obstructions that will interfere with the installation and long-term performance of the CIPP. If pre-installation inspection reveals an obstruction, misalignment, broken or collapsed section or sag that was not identified as part of the original scope of work and will prohibit proper installation of the CIPP, the Contractor may be directed by the Owner to correct the problem(s) prior to installation by utilizing open cut repair methods. The Contractor shall be compensated for this work under a contingency pay item designated for open cut point repairs. Removal of any previously unknown obstructions shall be considered as a changed condition. The cost of removal of obstructions that appeared on pre-bid video documentation and made available to the Contractor, prior to the bid opening, shall be compensated for on a unit price basis in accordance with the contract documents.
    3. The Contractor shall be responsible for confirming the locations of all branch service connections prior to installing the CIPP. If required in the contract documents, each connection will be dye tested to determine whether or not the connection is live or abandoned. The cost for dye testing of existing service connections shall be compensated at the unit price bid in the Proposal for Dye Testing of Existing Service Connections. In the event the status of a service connection cannot be adequately defined, the Owner will make the final decision, prior to installation of the liner, as to the status. Typically only service connections deemed “active” shall be reopened by the Contractor.
    4. The Contractor shall be allowed use water from an owner-approved fire hydrant in the project vicinity. The Contractor will be required to rent a hydrant meter from the Owner in accordance with these specifications. Contractor shall pay current market price for all water usage.
  1. INSTALLATION OF LINER
     1. The liner shall be installed and cured in the host pipe per the manufacturer’s specifications as described and submitted in the PWS.
     2. CIPP installation shall be in accordance with the applicable ASTM standards as modified in this section 3.2.
     3. If significant groundwater infiltration is present in the existing sewer such as heavy runners and gushers, the contractor shall install a pre-liner tube or perform chemical grouting to control resin loss and contamination, maintain CIPP thickness, prevent physical property reduction and prevent inadequate curing of the liner resulting from water or other contamination of the resin during installation. The pre-liner tube shall be a reinforced plastic tube to fit the existing pipeline and shall be continuous from manhole (access) to manhole (access).
     4. The wet-out tube shall be positioned in the pipeline using the method specified by the manufacturer. Care should be exercised not to damage the tube as a result of installation. The liner should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point.
     5. Prior to installation and as recommended by the manufacturer, remote temperature gauges or sensors shall be placed inside the host pipe to monitor the temperatures during the cure cycle. Liner and/or host pipe interface temperature shall be monitored and logged during curing of the liner.
     6. To monitor the temperature of the liner wall and to verify correct curing, where specified by the contract documents, temperature monitors can be placed between the host pipe and the liner in the bottom of the host pipe (invert) at manholes or access points and/or throughout its entire length (continuous) to monitor the temperature on the outside of the liner during the curing process. For continuous temperature monitoring, a fiber optic cable is installed in the pipe invert prior to the liner installation. The fiber optic cable is monitored by a computer that is capable of recording temperatures at the interface of the liner and the host pipe continuously in time and location throughout the entire pipeline being rehabilitated.
     7. Curing shall be accomplished by utilizing the appropriate medium or ultraviolet light in accordance with the manufacturer’s recommended cure procedure and/or schedule. The curing source or in and output temperatures shall be monitored and logged during the cure cycles, if applicable. The manufacturer’s recommended cure method & schedule shall be used for each line segment installed, and the liner wall thickness and the existing ground conditions with regard to temperature, moisture level, and thermal conductivity of soil, per ASTM as applicable, shall be taken into account by the Contractor.
     8. For heat cured liners, if any temperature sensor, or continuous sensor location does not reach the temperature as specified by the manufacturer to achieve proper curing or cooling, the installer can make necessary adjustments to comply with the manufacturer’s recommendations. For continuous temperature monitoring, the system computer should have an output report that specifically identifies stations along the length of pipe, indicates the maximum temperature achieved and the sustained temperature time at the stations. At each station along the length of the pipe, the computer should record both the maximum temperature and the minimum cool down temperature and comply with the manufacturers recommendations.
     9. For UV Cured Liners, all light train sensor readings, recorded by the tamper proof computer, shall provide output documenting the cure along the entire length of the installed liner. The cure procedure shall be in accordance with the manufacturer’s recommendation as included in the PWS submission by the contractor.
  2. COOL DOWN
     1. The Contractor shall cool the CIPP in accordance with the approved CIPP manufacturer’s recommendations as described and outlined in the PWS.
     2. Temperatures and curing data shall be monitored and recorded, by the Contractor, throughout the installation process to ensure that each phase of the process is achieved as approved in accordance with the CIPP System manufacturer’s recommendations.
  3. FINISH
     1. The installed CIPP shall be continuous over the entire length of a sewer line section and be free from visual defects such as foreign inclusions, dry spots, pinholes, major wrinkles, major lifts, laps, joints, cuts, terminal ends, and delamination. The CIPP shall be impervious and free of any leakage through the CIPP wall.
     2. Any defect which will or could affect the structural integrity or strength of the CIPP shall be repaired at the Contractor’s expense in accordance with the procedures submitted under Section 1.7 CIPP Repair/Replacement.
     3. The beginning and end of the CIPP shall be sealed to the existing host pipe. The sealing material shall be compatible with the pipe end and shall provide a watertight seal.
     4. If any of the service connections leak water between the host pipe and the installed CIPP, the connection mainline interface shall be sealed to provide a water tight connection.
     5. If the wall of the CIPP leaks, it shall be repaired or removed and replaced with a watertight pipe as recommended by the manufacture of the CIPP system and approved by the Owner.
     6. Compensation shall be at the actual length of cured-in-place pipe installed. The length shall be measured from center of manhole to center of manhole. The unit price per linear foot installed shall include all materials, labor, equipment and supplies necessary for the complete CIPP installation. Compensation for service connection sealing and pipe sealing at the manhole/wall interface shall be at the unit price bid in the Proposal.
  4. FLOWABLE FILL OF VOID AREAS

Where required by the owner, the contractor shall backfill voids that remain after installation of CIPP. The material shall be of the flowable fill type and shall be injected into the void while removing all trapped air from the void. The contractor shall submit the proposed method of placing the flowable fill, including pressures that will not collapse the CIPP and air release method to be employed, to the owner for review before any material is installed. The cost of this work shall be at the unit price bid for flowable fill complete and include all material, equipment and labor to complete the filling of the soil void.

* 1. MANHOLE CONNECTIONS AND RECONNECTIONS OF EXISTING SERVICES
     1. A seal, consisting of a resin mixture or hydrophilic seal compatible with the installed CIPP, shall be applied at manhole/wall interface in accordance with the CIPP System manufacturer’s recommendations.
     2. Existing services shall be internally or externally reconnected unless indicated otherwise in the contract documents.
     3. Reconnections of existing services shall be made after the CIPP has been installed, fully cured, and cooled down. It is the Contractor’s responsibility to make sure that all active service connections are reconnected.
     4. External reconnections are to be made with a tee fitting in accordance with CIPP System manufacturer’s recommendations. Saddle connections shall be seated and sealed to the new CIPP using grout or resin compatible with the CIPP.
     5. A CCTV camera and remote cutting tool shall be used for internal reconnections. The machined opening shall be at least 90 percent of the service connection opening area and the bottom of both openings must match. The opening shall not be more than 100 percent of the service connection opening. The edges of the opening shall not have pipe fragments or CIPP fragments which may obstruct flow or snag debris. In all cases the invert of the sewer connection shall be cut flush with the invert entering the mainline.
     6. In the event that service reinstatements result in openings that are greater than 100 percent of the service connection opening, the Contractor shall install a CIPP type repair, sufficiently in size to completely cover the over-cut service connection. No additional compensation will be paid for the repair of over-cut service connections.
     7. Coupons of pipe material resulting from service tap cutting shall be collected at the next manhole downstream of the pipe rehabilitation operation prior to leaving the site. Coupons may not be allowed to pass through the system.
     8. Compensation shall be at the actual number of services reconnected using either internal or external means as contained in the Proposal. The unit price bid per service line reconnected shall be include all materials, labor, equipment and supplies necessary to complete the work as required in these specifications.
  2. TESTING OF INSTALLED CIPP
     1. The physical properties of the installed CIPP shall be verified through field sampling and laboratory testing. All materials for testing shall be furnished by the Contractor to the Owner for testing. All materials testing shall be performed at the Contractor’s expense by an independent third party laboratory selected by the Owner as recommended by the CIPP manufacturer. All tests shall be in accordance with applicable ASTM test methods to confirm compliance with the requirements specified in these contract documents.
     2. The Contractor shall provide samples for testing to the Owner from the actual installed CIPP. Samples shall be provided from each section of CIPP installed or as required by the Owner. The sample shall be cut from a section of cured CIPP that has been inverted or pulled through a like diameter pipe which has been held in place by a suitable heat sink, such as sandbags. All curing, cutting and identification of samples will be witnessed by the Owner and transmitted by the Owner’s representative as specified, to the testing laboratory. On pipelines greater than 18 inches in diameter, the Owner may, at its discretion, require plate samples cured with the CIPP or designate a location in the newly installed CIPP where the Contractor shall take a sample. The Opening produced from the sample shall be repaired in accordance with manufacturer’s recommended procedures.
     3. The laboratory results shall identify the test sample location as referenced to the nearest manhole and station. Final payment for the project shall be withheld pending receipt and approval of the test results. If properties tested do not meet the minimum physical and thickness requirements, the CIPP shall be repaired or replaced by the Contractor unless the actual physical properties and the thickness of the sample tested meet the design requirements as required in the contract.
     4. Chemical resistance - The CIPP system installed shall meet the chemical resistance requirements of ASTM F1216 and ASTM D5813. CIPP samples tested shall be of the fabric tube and the specific resin proposed for actual construction. It is required that CIPP samples without plastic coating meet these chemical testing requirements. A certification may be submitted, by the contractor, from the manufacturer verifying that the chemical resistance of the CIPP meets the contract requirements.
     5. Hydraulic Capacity - Overall, the hydraulic capacity shall be maintained as large as possible. The installed CIPP shall, at a minimum, be equal to the full flow capacity of the original pipe before rehabilitation. In those cases where full capacity cannot be achieved after CIPP installation, the Contractor shall submit a request to waive this requirement together with the reasons for the waiver request. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.
     6. The installed CIPP thickness shall be measured for each line section installed as per the ASTM requirements specified. If the CIPP thickness does not meet that specified in the contract and submitted as the approved design by the Contractor, then the CIPP shall be repaired or removed unless the tested physical properties and the thickness of the sample tested meet the design requirements as required in the contract. The CIPP thickness shall have tolerance of minus 5% - plus 10%. In worker-entry size piping, the Contractor shall remove a minimum of one sample every line section of installed CIPP to be used to check the CIPP thickness. The samples shall be taken by core drilling 2-inch diameter test plugs at random locations selected by the Owner. The openings produced from the samples shall be repaired in accordance with manufacturer’s recommended procedures.
     7. All costs to the Contractor associated with providing cured CIPP samples for testing shall be included in the unit price for work requiring such testing. Payment for all testing by a laboratory will be paid for by the Contractor directly to the laboratory.
  3. FINAL ACCEPTANCE
     1. All CIPP post-inspection CCTV footage, sample testing results, and repairs to the installed CIPP, as applicable, shall be completed before final acceptance, meeting the requirements of these specifications, and documented in written form.
     2. The Contractor shall perform a detailed closed-circuit television inspection, in accordance with ASTM standards, in the presence of the Owner after installation of the CIPP and reconnection of the side sewers. A radial view (pan and tilt) TV camera shall be used. The finished CIPP shall be continuous over the entire length of the installation and shall be free of significant visual defects, damage, deflection, holes, leaks and other defects. Unedited digital documentation of the inspection shall be provided to the Owner within ten (10) working days of the CIPP installation. The data shall note the inspection date, location of all reconnected side sewers, debris, as well as any defects in the CIPP, including, but not limited to, gouges, cracks, bumps, or bulges. If post installation inspection documentation is not submitted within ten (10) working days of the CIPP installation, the Owner may at its discretion suspend any further installation of CIPP until the post-installation documentation is submitted. As a result of this suspension, no additional working days will be added to the contract, nor will any adjustment be made for increase in cost. Immediately prior to conducting the closed circuit television inspection, the Contractor shall thoroughly clean the newly installed CIPP removing all debris and build-up that may have accumulated at no additional cost to the Owner.
     3. Bypass pumping or plugging from the upstream manhole shall be utilized to minimize sewage from entering the line during the inspection. In the case of bellies in the line, the pipe shall be cleared of any standing water to provide continuous visibility during the inspection.
     4. Where leakage is observed through the wall of the pipe, the contractor shall institute additional testing including, but not limited to, air testing, hydrostatic (exfiltration) testing, localized testing (such as a grout packer) or any other testing that will verify that the leakage rate of the installed CIPP does not exceed acceptable tolerances specified in the contract. As an alternative to further leakage testing, the contractor may choose to repair any observed leaks. Costs associated with additional testing will be the responsibility of the Contractor.

\*\*END OF SECTION\*\*