Collections System Rehabilitation Project Phase 2
Specifications and Contract Documents

Town of Boonsboro
C/O Paul Mantello, Town Manager
21 North Main Street
Boonsboro, Maryland 21713
Phone: 301.432.5141

Bid Documents Package
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The Town of Boonsboro ("Town") is issuing this Invitation for Bid (IFB) to seek a Qualified Contractor for the Rehabilitation of Wastewater Collection Pipelines and related service in Boonsboro, MD. Interested parties may obtain Bidding Documents from the Town as posted on the Town's Website, [http://www.town.boonsboro.md.us/](http://www.town.boonsboro.md.us/).

Qualified bidders should have previous experience and provide at least three (3) recent references for Cast in Place Pipe (CIPP) lining and submit the references to the Town. To demonstrate bidder's qualifications to perform the work, they may also be required to submit written evidence on financial data, present commitments, and other such data as may be requested by the Town. Each bid must contain evidence of bidder’s qualifications to do business in the State of Maryland, including a copy of the bidder’s valid State of Maryland Contractor’s License and Proof of Insurance, as required by the contract. The Town may make such investigations as deemed necessary to determine the ability of the bidder to perform the work, and the bidders shall furnish to the Town all such information and data for this purpose, as may be requested. Complete qualifications must be provided for any subcontractors to be utilized and such subcontractors must be managed by the bidder. Conditional bids will not be accepted.

**A pre-bid meeting will be held at 1:00 PM, on Monday June 29th, at the Boonsboro Town Hall, 21 N. Main St., Boonsboro, MD 21713.** Sealed bids, including the proposal form, will be received at the Office of the Town Clerk, Town Hall, 21 N. Main St., Boonsboro, Maryland 21713, until **2:00 PM, Friday, July 10th.** All bids must be submitted in a sealed envelope and marked: **"Collections System Rehabilitation Project PHASE II".**

The Town of Boonsboro reserves the right to accept proposals individually or collectively, to accept or reject any or all proposals, waive any informalities, and take whatever action is to the best interest of the Town of Boonsboro. Value, knowledge, experience, references, and other factors will determine the winning bidder. Unless otherwise specified, all formal bids submitted shall be binding for Ninety (90) calendar days following the bid opening date, unless the bidder, upon request of the Town, agrees to an extension. Bidder agrees to abide by the specification and contraction requirements and all applicable laws and regulations.

TOWN OF BOONSBORO
Paul Mantello, Town Manager
I/WE AGREE to furnish and deliver all materials and to perform all work, in accordance with Plans, Specifications, General Provisions, Special Provisions and Contract Documents, and related items necessary to complete the work for Collections System Rehabilitation Project Phase II in the Town of Boonsboro, Maryland. I/WE understand that the quantities of work as shown herein are approximate only and are subject to increase or decrease, and further understand that all costs in connection with the complete performance of the work (as described in the Contract Documents) shall be included in the Contract price for the entire work to be performed under this contract. I/WE AGREE Liquidated damages are assessed at $500 per day for each calendar day that any work shall remain uncompleted beyond the time specified.

I/WE having carefully examined the Contract Documents (Specifications, General Provisions, Special Provisions etc.) for the work hereinbefore named, and in conformity with the Contract Documents and of the site of the work, and propose to furnish all necessary machinery, equipment, tools, labor and other means of construction, and furnish all materials specified in the manner and at the time prescribed, and perform all work for the sum of:

<table>
<thead>
<tr>
<th>Action (in order of priority)</th>
<th>Description</th>
<th>Location</th>
<th>Size (in)</th>
<th>Segments</th>
<th>Length (ft)</th>
<th>Unit Cost</th>
<th>Units</th>
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<tr>
<td>1 Cast In Place Pipe Lining</td>
<td>MH N43 to MH N46</td>
<td>Thompson Court</td>
<td>10</td>
<td>3</td>
<td>1180</td>
<td>ft</td>
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<tr>
<td>2 Cast In Place Pipe Lining</td>
<td>MH N36 to MH N41</td>
<td>Graystone Drive</td>
<td>10</td>
<td>5</td>
<td>990</td>
<td>ft</td>
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<td>3 Cast In Place Pipe Lining</td>
<td>MH 26 to MH 30</td>
<td>S Main Street</td>
<td>8</td>
<td>4</td>
<td>1080</td>
<td>ft</td>
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<tr>
<td>4 Cast In Place Pipe Lining</td>
<td>MH K1 to MH N3</td>
<td>Kinsey Heights / BOE Property</td>
<td>8</td>
<td>3</td>
<td>1080</td>
<td>ft</td>
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<td>5 Cast In Place Pipe Lining</td>
<td>MH N32 to MH N36</td>
<td>Della Ln / Graystone Drive</td>
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<td>4</td>
<td>960</td>
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<td>6 Cast In Place Pipe Lining</td>
<td>MH K5 to MH K19</td>
<td>Kinsey Heights / Lanfield</td>
<td>8</td>
<td>7</td>
<td>1320</td>
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<td>MH K8 to MH K12</td>
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<td>2</td>
<td>410</td>
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<td>8 Cast In Place Pipe Lining</td>
<td>MH K4 to MH K26</td>
<td>Kinsey Heights / Carroll</td>
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<td>1</td>
<td>290</td>
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<td>9 MH rehab</td>
<td>14 Total Manholes</td>
<td>Various</td>
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<td>140</td>
<td>Vlf</td>
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<td>10 Clean Sewer Main &lt;12&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7310</td>
<td>ft</td>
<td></td>
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<tr>
<td>11 Video Sewer Main &lt;12&quot;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7310</td>
<td>ft</td>
<td></td>
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<tr>
<td>12 Traffic Control</td>
<td>estimate 3 days</td>
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<td></td>
<td></td>
<td>3</td>
<td>day</td>
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<td>13 Heavy Clean</td>
<td>root cutting</td>
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<td></td>
<td>8</td>
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<td>15 Mobilization/Contingency</td>
<td>2.50%</td>
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Total Project Cost

Grand Total

NAME OF COMPANY

Signature

NAME OF SIGNING OFFICIAL

ADDRESS

PHONE NUMBER
DIVISION 1 - GENERAL

1.1 - DEFINITIONS

OWNER: The Owner shall be understood to mean the Town of Boonsboro, Maryland.
ENGINEER: Wherever reference is made to the Engineer, it shall be understood to mean the Town’s contracted engineer, or their designated representative.
DEPARTMENT: Town Administration.
CONTRACTOR: The individual or business entity providing the services under this contract.

For other definitions, Refer to MD Department of Transportation, State Highway Administration’s Standard Specifications for Construction and Materials dated January 2001 and revised 2008 including all revisions and additions and special provisions for materials and construction.
1.2 PROJECT REQUIREMENTS

The intended purpose of this contract is to rehabilitate wastewater pipeline segments using cast in place pipe (CIPP) so as to provide a rehabilitated segment which is structurally sound, defect free, leak free, with better flow properties.

The price proposal for CIPP rehabilitation will be inclusive of: cleaning and preparing the pipe segment, removing any protrusions and debris from the line, verifying active taps, bypassing flow, CIPP lining, reinstating active taps, epoxy mortaring the manhole basins, controlling odors and chemical exposures, permitting, traffic control, pre and post video inspection, testing, restoring any disturbed areas or amenities, and any other incidentals. Pre-grouting will be paid as a contingency item on an as-needed basis.

This rehabilitation contract generally involves the following:
- Obtain necessary permits – road closing etc. and provide traffic control.
- Provide active tap verification.
- Set up and maintain bypass pumping. SSO’s and reporting are responsibility of contractor.
- Perform pipe line cleaning and pre video inspection, w/ bypass in place (preferred) or run jetter ahead of camera to pull flow out of the way.
- Remove intruding taps and other protrusions of more than 0.5”.
- Provide hydrophilic end seals and epoxy mortar required at terminations and the manhole basin so that a leak free system is provided.
- Provide a structurally sound, impervious, cast-in-place pipe lining which substantially maintains flow capacity.
- Prepare test specimens and provide testing results.
- Collect cure data and provide curing logs.
- Perform a post video inspection w/ bypass in place. Provide both pre and post video to be viewed by Town Administration.
- Remove all pieces of cut liner and debris.
- Control odors and chemical exposure.
- Provide a smooth pipe line: Wrinkles, bumps etc. Tolerance -> no more than 5% flow restriction allowed without reduced value or correction required.
- Restore any amenities including easements which have to be disturbed due to the work.
- Provide lining through intermediate MHs with straight through channel if required.
- Provide pre grouting as a contingency pay item for high infiltration lines when necessary.
- Following all federal contract work requirements as this work is partially federally funded.
- Anything not specifically mentioned as pay item but which is necessary to prove a fully functional finished product shall be considered incidental.

The wastewater pipeline segments to be rehabilitated are located in easements and street right of ways throughout the Boonsboro and immediately surrounding areas. The Contractor shall begin work outlined within fifteen (15) working days after the Notice to Proceed date. All work shall be completed within Two Hundred and Forty (240) calendar days after beginning unless otherwise written authorization is provided by the Town.
1.3 - GENERAL CONDITIONS

1.3.1 Work by Owner: Owner may perform certain activities in connection with the project with its own personnel.

1.3.2 Superintendence by Contractor: At the site of work, the Contractor shall employ a construction superintendent or foreman who shall have full authority to act for the Contractor and be able to send and respond to emails and phone calls in a timely manner. It is understood that such representative shall be acceptable to the Owner. {The Contractor’s attention is called to the requirements of the Dept. of Transportation, State Highway Administration’s Specifications entitled “Standard Specifications for Construction and Materials” July 2008, under Section 5, GP-5.04.}

1.3.3 Owner Authority: The Owner shall have authority under this contract and specifications relative to the execution of the work. The Owner shall determine the amount, quality, acceptability, and fitness of the several kinds of work and materials which are to be paid for under this contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Owner’s estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any questions shall arise between the parties hereto relative to said contract or specifications, the determination or decision of the Owner shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question. The Owner shall decide the meaning and intent of any portion of the specifications and of any plan or drawings where the same may be found obscure or be in dispute. Any differences or conflicts in regard to their work which may arise between the Contractor under this contract and other Contractors performing work for the Owner shall be adjusted and determined by the Owner.

1.3.4 Inspection and Inspector Authority: The authorized representatives and agents of the Owner shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and relevant data and records. Such inspection may extend to all or any part of the work and to the preparation or manufacture of the materials to be used. No inspection nor any failure to inspect shall relieve the Contractor from any obligation to perform all of the work strictly in accordance with the requirements of the specifications. In case of any dispute arising between the Contractor and any inspector as to materials furnished or the manner of performing the work, the inspector shall have the authority to reject materials or suspend the work until the question at issue can be referred to and decided by the Owner. The inspectors shall not be authorized to revoke, alter, enlarge, relax, or release any requirements of these specifications. Inspectors shall in no case act as foreman to perform other duties for the Contractor. Any instructions which the inspectors may give the Contractor shall in no way be construed as binding the Owner in any way, nor releasing the Contractor from fulfillment of the terms of the Contract.

1.3.5 Construction Schedule and Sequence of Operations: It shall be the Contractor’s responsibility to submit a schedule of operation sequences to the Owner and obtain the Town’s approval before any work is done under the contract. This schedule shall be prepared in a manner that will insure the satisfactory completion of the project within the time allowed for the project.

1.3.6 Reports, Records, and Data: The Contractor shall submit to the Owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this contract.
1.3.7 Shop Drawings and Submittals: Shop drawings, inspection reports, and submittals are required for materials and construction to be used in the project. The Contractor shall prepare and submit to the OWNER a schedule for the submission of working drawings, reports, and materials submittals. The schedule shall include each type of working drawings (e.g. manholes, compaction report etc.). Approximate number of drawings to be reviewed, estimated date of first submission, and estimated rate of submission of drawings (e.g. 5 weeks). Where possible, the most crucial drawings shall be submitted first with enough time for review so as to minimize delays during construction. All materials submittals, shop plans, and working drawings for the subject project shall be sent or delivered to: Town Manager, 21 N. Main St. BOONSBORO, MD 21713, townmanager@townofboonsboro.com.

The Contractor, fabricator or supplier shall furnish to the above address two (2) prints each of all working drawings, etc. for primary review. After review by the Owner and the return thereof, the Contractor shall make such corrections to the drawings as have been indicated. The Contractor shall submit two (2) revised/corrected copies for stamping and distribution. If the Contractor requires additional copies, the additional copies shall be submitted after primary review is complete. All shop plans and working drawings for the subject structures will not be considered approved until they bear the approval of the Owner.

1.3.8 Land and Rights of Way: The necessary rights-of-way and easements for the area occupied by the proposed improvements have been obtained by the Town of Boonsboro. Any additional rights-of-way or easements required by the Contractor for plant operations, equipment, storage of materials, disposal area, etc., must be obtained and paid for by the Contractor.

1.3.9 Work Hours: Regular work hours are to be Mon-Fri 7:00 AM - 5 PM, excluding Holidays. However, work in state rights-of-way may be required to be done at night. Requests to do work other than normal working hours shall be submitted to the Owner for approval with 48-hours’ notice. Overtime fees may apply for inspections that are required during non-working hours, and costs shall be paid to the Owner or deducted from the contract total at the Owner’s discretion.

1.3.10 Subcontracting: Contractor may not sublet the contract without the approval of the Town. Whenever the Town shall notify the Contractor of any Subcontractor who is incompetent, disorderly, or otherwise unsatisfactory, that person/firm shall be removed from the project.

1.3.11 Change Order: Without invalidating the contract, Owner may order additions, deletions, or revisions to the work by a Change Order. Both Parties (Contractor and Owner) shall agree to the terms of change orders. Contractor shall not be entitled to an increase in the contract price or an extension of the contract time, or other changes to the contract without initiating a written change order request and having it approved by the Owner.

1.3.12 Claims: The claimant shall provide written notice of the amount and extent of the claim to the Owner and other party regarding any claims. The responsibility to substantiate the claim lies with the claimant and they shall provide all supporting documentation within 60 days to the Owner and other party. Owner will have 30 days to decide the claim. Owner may deny the claim, in whole or in part, or approve the claim, or notify the parties it is deemed inappropriate for the Owner to decide the claim, such notice will be deemed a denial. In the event no action is taken within 30-days, the claim will be deemed denied.

1.3.13 Use of Premises and Removal of Debris: The Contractor expressly undertakes at his own expense:

A) To take every precaution against injuries to persons or damage to property.
B) To store his apparatus, materials, supplies, and equipment in a location approved by the Owner and in such orderly fashion at the site of work as will not interfere with the progress of his work or the work of any other Contractors.
C) To frequently clean up all refuse, rubbish, scrap materials, and debris caused by his operation, that the work site shall be neat and orderly at all times. Landfill tipping fees are considered incidental.
D) To remove all surplus materials, false work, temporary structures, including foundations thereof, and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition before final payment is made by the Town of Boonsboro.
1.3.14 Public Convenience and Safety: In addition to the requirements of Section 7, GP-7.06, of the MDSHA “Standard Specifications for Construction and Materials,” July 2008, add the following provisions:

A) Dust control by sprinkling water or the use of chemicals shall be performed by the Contractor to the satisfaction of the Owner.

B) The condition of the work at all times shall be such that sudden storms or prolonged rainfall will not cause such damage to property in the vicinity of the work that could in any way be attributed to the performance of the work.

C) If, in the opinion of the Owner, the public has been unreasonably inconvenienced to a great extent, or that certain conditions provide a threat to public safety, or that work performed by the Contractor has caused damage to property in the area of the work, which has not been remedied quickly and satisfactorily, the Owner shall have the authority to order all operations to cease until such time as such conditions are remedied to his satisfaction, and any delay caused thereby shall not be considered just cause for any extension of time in the completion of the contract. Upon refusal of the Contractor to promptly comply with corrective measures, the Owner will immediately proceed with correcting the deficiencies in the same manner as specified in the MDSHA “Standard Specifications for Construction and Materials,” July 2008, Section GP-5.12.

1.3.15 Protection of Work and Property – Emergency: The Contractor shall at all times safely guard the Owner’s property from injury or loss in connection with this contract. He shall at all times safely guard and protect his own work and materials, and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury unless such be caused directly by error contained in the contract or by the Owner, or his duly authorized representative. In case of an emergency which threatens loss or injury of property and/or safety of life, the Contractor will be allowed to act without previous instruction from the Owner in a diligent manner. He shall notify the Owner immediately thereafter. Any claim or compensation by the Contractor due to such extra work shall be promptly submitted to the Owner for approval. Where the Contractor has not taken action but has notified the Owner of an emergency threatening injury to persons or damage to the work, or any adjoining property, he shall act as instructed or authorized by the Owner.

1.3.16 Traffic Control: The Contractor shall provide full traffic control for all work within the public ways including alleys, streets, roads, etc. All parking lot work, street work, traffic control, sediment shall be in accordance with the requirements of the Owner which is cognizant on these issues. Contractor is responsible for coordinating with the property Owner and developing a traffic control plan and scheduling to minimize disruption to the vehicular and pedestrian traffic. Reasonable notice (at least 48 hours) shall be given prior to closing travel ways, parking lots, etc. During progress of work, sidewalks and crossings shall be kept open for the passage of pedestrians unless otherwise authorized. Parking lots, roads and private entrances shall not be unnecessarily obstructed, and unless the Owner shall authorize the complete closing of a travel way, the Contractor shall take such measures, at their expense, to keep the travel ways open for traffic. It will be the Contractor’s responsibility to supply his own traffic control as required by the particular location and/or jurisdiction.

1.3.17 Sediment and Erosion Control: Contractor shall be responsible for sediment control and shall install appropriate vehicle wash racks, diversions, sediment traps, super silt fence, stone check dams, inlet protection, seed mulch and jute matting etc. prior to construction and maintain such throughout the project. Contractor shall prevent the erosion of soil on the site and adjacent property resulting from construction activities.

1.3.18 Pollution Control and Spills: Contractor shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, oil, debris and other substances resulting from construction activities. Violations resulting from spills shall be the sole responsibility of the Contractor. The Contractor shall be responsible, at his own cost, for all cleanup of the affected area as required by Laws and Regulations.
1.3.19 Operation of Existing Utilities:

The existing utilities must be kept in continuous operation throughout the construction period. No interruption will be allowed which adversely affects the degree of service provided. Contractor shall provide temporary facilities as needed.

A. No planned or unplanned utility interruption will be acceptable to any building that interrupts regular business activities. Provide temporary utility backups when necessary.

B. Contractor to coordinate shut-down and temporary location of utilities during construction.

C. Locate, identify, disconnect, and seal/cap off utilities indicated to be removed.
   1. Arrange to shut off indicated utilities with utility companies.

D. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Notify Owner not less than two days in advance of proposed utility interruptions.
   2. Do not proceed with utility interruptions without Owners written permission.

1.3.20 Baseline Conditions: Contractor shall be responsible for the production of construction photographs and video prior to the commencement of work. Digital photos and video shall be taken along construction alignments. These shall be taken every 25 feet and anywhere excavation is to occur. All photographs shall be in color and should be clear, with sufficient lighting to clearly see all details. Digital photos and video shall be submitted to the Owner, prior to starting construction.

1.3.21 Preconstruction Conference: Prior to the commencement of work at the site, a preconstruction conference will be held at the Boonsboro Town Hall 21 N. Main St. Boonsboro MD 21713 at an agreed upon time. The conference shall be attended by:

- Contractor
- Subcontractors
- Supplier representatives
- Representatives of the Owner
- Others as requested

The Contractor shall provide a preliminary schedule of work and a schedule for submittals by the time of this meeting. The purpose of this meeting will be to designate responsible personnel and work coordination. Other matters on the agenda will include:

- Scheduling
- Transmittal submissions and review
- Processing applications for payment
- Maintaining documentation and progress communication
- Critical work sequencing
- Use of premises, storage and field office
- Contractor assignments for safety and first aid.

1.3.22 Progress Documentation and Communication: Each week the Contractor shall send an email to the designated personnel of the Owner stating the work accomplished, and significant issues, and the work to be performed the following week. Digital pictures of the work shall be included in the weekly reports. Each Month the Contractor shall provide a comprehensive report of all work completed, with the associated start dates and completion dates per the construction schedule, a list of the activities on which work is currently in progress, the approximate percentage of work complete, and the number of working days left to complete the project. This shall be sent out by email 2 work days prior to the associated progress meeting.
1.3.23 Progress Meetings: Contractor shall schedule and hold regular progress meetings at least monthly and other times as requested by Owner, or as required by the progress of Work. Contractor, and all Subcontractors active on site, shall be represented at each meeting. Contractor shall preside at the meetings and prepare/distribute the meeting agenda prior to the meeting and prepare and distribute the meeting minutes within 2 working days after the meeting. The purpose of the meeting shall be to review the progress of the work, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems which may develop.

1.3.24 Time for Completion and Liquidated Damages: Unless approved in writing by the Town, this project shall be completed by the Contractor in the timeframe specified within the Project Description. The Contractor agrees that the required work be performed regularly and uninterruptedly at such rate of progress as will facilitate full completion thereof within the specified timeframe. Should it be discovered that unforeseen site conditions impede the work progress, a change order may be warranted to extend the contract timeframe. The Contractor will be required to submit a request for such an extension to offset any justified delays.

Should the Contractor neglect, fail, or refuse to complete the work within the time herein specified, or any extension granted by the Owner, then the Contractor does hereby agree to pay the amount of $500 as liquidated damages for such breach of contract, for each day the work remains unfinished or deficiencies remain after the contract time has run out.

1.3.25 Identification Required: Contractor vehicles shall be readily identifiable with the name of the Contractors firm and contact information. Contractor personnel shall be have visible identification tags or equivalent with personnel name and firm name.

1.3.26 Notifications: The Contractor shall:
A. Provide a draft notification to be reviewed and approved by the town.
B. Deliver written notices to all homes and businesses 48 hours prior to commencement of work being conducted in the vicinity, including a local telephone number for inquiries.
C. Provide Owner or occupant a summary of work to be completed, and time and duration of operations and information on any chemical used which may affect people or pets.
D. Contact any home or business where ingress and egress will be unavailable to property within time stated in written notice. Work with property Owners to minimize disruptions.
E. Email copies of all delivered notices to Owner.

1.3.27 Quantities Of Estimate: Wherever the estimated quantities of work to be done and materials to be furnished on a unit price basis under this contract are shown in any of the documents including the proposal, they are given for use in comparing bids, and the right is expressly reserved, except as herein otherwise specifically limited, to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the work contemplated by this contract, and as such increase or diminution shall in no way vitiate this contract, nor shall any such increase or diminution give cause for claims or liability for damages. Contractor shall notify the Town within ten (10) working days of receiving the Notice to Proceed if any estimated quantities are more than 25% from the Contractors estimate. For unit cost contracts only, Failure to do so may preclude the Contractor from receiving any adjustment to the contract unit price if the quantities differ by more than 25% from the actual quantity.

1.3.28 Drawings and Specifications Furnished to Contractor: The Town will furnish free of charge to the successful Contractor pdf copies of the contract documents. Any additional copies requested shall be at the expense of the Contractor. All information provided to the Contractor is based upon the best available knowledge; the Contractor is responsible for making field measurements and verifications.
1.3.29 Materials Ownership:
A. Except for materials indicated to be stockpiled or to remain Owner’s property, cleared materials shall become Contractor’s property and shall be removed from the site.
B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner’s premises.
C. The Town will designate an area on Town property for materials such as Millings, Soil etc. which the Town would like to retain, The Contractor shall haul the materials to the designated site.

1.3.30 Payment: The Contractor shall be compensated on a unit cost basis for actual work completed in accordance with the work listing. Anything not specifically mentioned shall be considered incidental. The costs shall be broken down by task and discipline. If requested, partial payment to the Contractor may be reviewed and approved based upon the work effort completed (less 10% retainage). The Contractor shall invoice the Town of Boonsboro, 21 N. Main St., Boonsboro, Maryland for work satisfactorily completed. All invoices shall include a complete itemized description of the work effort covered by the billing. Failure to provide a complete description of work actually completed may delay processing of the invoice.

1.3.31 Acceptance of Final Payment as Release: The acceptance by the Contractor of final payment shall be, and shall operate as, a release to the Owner of all claims and all liability from the Contractor for all things done or furnished in connection with this work and for every act and neglect of the Owner and others relating to or arising out of this work.

1.3.32 As-Built Requirements: None required for this contract

1.3.33 Release of Liens: The Contractor shall submit to the Town a complete Release of Liens from all Subcontractors and the general Contractor prior to the issuance of final payment by the Town.

1.3.34 Final Review and Inspection, Substantial Completion: The final inspection shall be performed by all parties involved at the project completion. The Contractor shall inform the Owner, in writing, the substantial completion date of the project. The Contractor will be notified by the Owner within thirty (30) working days of any incomplete and/or defective work. The Contractor shall immediately take such measures as necessary to remedy such deficiencies and shall notify the Owner at completion. A second inspection shall be performed as required.

1.3.35 Warranty Period: A one year warranty period starts as of the date of the FINAL ACCEPTANCE. An inspection will be conducted by the Town within thirty (30) calendar days of the one year anniversary of this Final Acceptance. The Contractor shall be notified of any deficiencies and shall correct them promptly.
1.4 – SPECIAL REQUIREMENTS

1.4.1 Living Wages and Wage Scale: Davis-Bacon Wage scales for Washington County MD and living wage rates are required for this project as applicable.

Basic Provisions/Requirements

The Davis-Bacon Act requires that all contractors and subcontractors performing on federal contracts (and contractors or subcontractors performing on federally assisted contracts under the related Acts) in excess of $2,000 pay their laborers and mechanics not less than the prevailing wage rates and fringe benefits listed in the contract’s Davis-Bacon wage determination for corresponding classes of laborers and mechanics employed on similar projects in the area. Davis-Bacon labor standards clauses must be included in covered contracts.

Apprentices may be employed at less than predetermined rates if they are in an apprenticeship program registered with the Department of Labor or with a state apprenticeship agency recognized by the Department. Trainees may be employed at less than predetermined rates if they are in a training program certified by the Department.

Contractors and subcontractors on prime contracts in excess of $100,000 are required, pursuant to the Contract Work Hours and Safety Standards Act, to pay employees one and one-half times their basic rates of pay for all hours over 40 worked on covered contract work in a workweek. Covered contractors and subcontractors are also required to pay employees weekly and to submit weekly certified payroll records to the contracting agency.

Employee Rights

The Davis-Bacon and Related Acts provide laborers and mechanics on covered federally financed or assisted construction contracts the right to receive at least the locally prevailing wage rate and fringe benefits, as determined by the Department of Labor, for the type of work performed. The Wage and Hour Division and respective federal contracting agencies accept complaints of alleged Davis-Bacon violations.

Recordkeeping, Reporting, Notices and Posters

Notices and Posters

Every employer performing work covered by the labor standards of the DBRA must post the WH-1321 “Employee Rights Under the Davis-Bacon Act” poster at the site of the work in a prominent and accessible place where it may be easily seen by employees. There is no particular size requirement. The wage determination must be similarly posted.

Recordkeeping

Under the DBRA, covered contractors must maintain payroll and basic records for all laborers and mechanics during the course of the work and for a period of three years thereafter. Records to be maintained include:

- Name, address, and Social Security number of each employee
- Each employee's work classifications
- Hourly rates of pay, including rates of contributions or costs anticipated for fringe benefits or their cash equivalents
- Daily and weekly numbers of hours worked
- Deductions made
- Actual wages paid
- If applicable, detailed information regarding various fringe benefit plans and programs, including records that show that the plan or program has been communicated in writing to the laborers and mechanics affected

Some of the records required to be kept under the law are also required under the Fair Labor Standards Act. See Wage and Hour Division Fact sheet #21: Recordkeeping Requirements under the Fair Labor Standards Act (FLSA).

Reporting

Each covered contractor and subcontractor must, on a weekly basis, provide the federal agency a copy of all payrolls providing the information listed above under "Recordkeeping" for the preceding weekly payroll period. Each payroll submitted must be accompanied by a "Statement of Compliance." The contractor, subcontractor or the authorized officer or employee of the contractor or subcontractor who supervises the payment of wages must sign the weekly statement. Statements of Compliance are to be made on the form WH-347 “Payroll (For Contractors Optional Use)” or on any form with identical wording. This must be completed within seven days after the regular pay date for the pay period.
1.4.2 MBE VSBE: MBE (Minority Business Enterprise) and VSBE (Veteran Owned Small Business Enterprise) requirements and goals are not required for this project but the use of Women, minority and veteran owned business is highly encouraged.

1.4.3 Federal Funding: Federal funds are being used for this project.

1.4.3 Bonding: The Contractor shall furnish a **Performance Bond** in an amount at least equal to one hundred percent (100%) of the contract price as security for the faithful performance of this contract and also a **Payment Bond** in the amount equal to one hundred percent (100%) of the contract price as security for the payment of all persons performing labor on the project under this contract and furnishing materials in connection with this contract.

Both bonds must be in place for the duration of the project and extend for a period of one year after the project is finished.

The Performance Bond and Payment Bond may be in one or in separate instruments in accordance with local law. Before final acceptance, each bond must be approved by the Owner.
DIVISION 2 – CLEANING

2.1 CLEANING PRECAUTIONS

During wastewater cleaning operations, satisfactory precautions shall be taken in the use of cleaning equipment. When hydraulically propelled cleaning tools (which depend upon water pressure to provide their cleaning force) or tools which retard the flow in the wastewater line are used, precautions shall be taken to insure that the water pressure created does not damage or cause flooding of pipes, or public or private property being served by the wastewater.

When water from fire hydrants is necessary, the water shall be conserved and not used unnecessarily. Hydrants shall always be opened VERY SLOWLY, and with close supervision from Town Staff, to prevent water hammer effects. No fire hydrant shall be obstructed in case of a fire in the area served by the hydrant. Fire Hydrant usage shall only be done under the terms and conditions of the Town of Boonsboro and its superintendent. A meter with backflow prevention is required at all times.

It is recognized that there are some conditions such as broken pipe and major blockages that prevent cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. Should such conditions be encountered, the Contractor shall notify the Owner.

2.2 CLEANING EXECUTION

All wastewater lines designated for video inspection and lining shall be cleaned to remove debris and obstructions to allow passage of the camera and to allow for the CIPP lining installation. Pipe shall be cleaned to the extent necessary for effective internal inspection and lining. Re-cleaning necessary to remove roots, grease, and debris accumulations that prevent the travel of the camera and lining installation is the responsibility of the contractor.

The designated wastewater manhole sections shall be cleaned using hydraulically propelled, high-velocity jet, or mechanically powered equipment. Selection of the equipment used shall be based on the conditions of lines at the time the work commences. The equipment and methods selected shall be satisfactory to the Owner. The equipment shall be capable of removing dirt, grease, rocks, sand, and other materials and obstructions from the wastewater lines and manholes. If additional cleaning is required beyond the capability of the hydraulic equipment, the contractor shall provide cable machines capable of employing buckets, brushes, scrapers, swabs, or other devices that will remove heavier debris. Intruding taps: Intruding taps and any other protrusions shall be cut or ground down so as to be flush with the interior pipe surface to within ½”.

Root Removal: Roots shall be removed in the designated sections where root intrusion is a problem. Special attention should be used during the cleaning operation to assure almost complete removal of roots from the joints. Procedures may include the use of mechanical equipment such as rodding machines, bucket machines and winches using root cutters and porcupines, and equipment such as high-velocity jet cleaners. Chemical root treatment may be used at the option of the Contractor.

Debris from cleaning operations shall not be passed from one section to another and shall be removed daily and transported without spillage to an approved disposal site selected by the contractor. Dams and screens shall be utilized to ensure all debris is collected and removed from the collection system. Cleanup shall include removal of all cleaning debris inside and around the manhole.

Materials shall be dewatered as much as is practical before removal. Under no circumstances shall the removed wastewater or solids be dumped onto streets, into ditches, rights-of-ways, easements, waterways, inlets, storm sewers or otherwise improperly disposed. If wastewater is unintentionally spilled, discharged, leaked or otherwise released into the environment, the contractor shall be responsible for cleaning up the spill and remediating the area and any related fines. The contractor shall comply with all local, state and federal regulatory requirements regarding spills and reporting spills.
DIVISION 3 – VIDEO AND DIGITAL PHOTO INSPECTIONS

3.1 GENERAL

Section includes requirements to execute video inspections of wastewater mains and laterals. Concurrently with the pre inspection, clean the pipe line and remove protruding taps and other impediments, in accordance with the CLEANING section.

Follow the PUBLIC NOTIFICATION requirements (See GENERAL PROJECT PROVISIONS.)

3.2 QUALIFICATIONS

Operators performing CCTV inspection shall have a minimum of 1 year experience in video inspection of wastewater pipelines and be Certified by National Association of Sewer Service Companies (NASSCO) in the following; 1. PACP for inspection of sewer mains. 2. MACP for inspection of manholes. 3. LACP for inspection of laterals.

3.3 EQUIPMENT

The Contractor shall provide equipment to perform inspections of sewer mains, manholes and laterals from mainline to property line or cleanout located in streets, street rights-of-way, and off road easements. Including but not limited to portable VIDEO equipment, vehicles capable of transporting VIDEO equipment and accessing remote easements, and adequate cleaning equipment.

Have DVD and necessary video playback equipment readily accessible for review by Owner.

Contractor shall have backup equipment that is available and can be delivered to site within 48 hours.

Cameras: All cameras shall be specifically designed and constructed for this application. They shall be capable of:

- Producing minimum 470H-line resolution color video picture.
- Inspecting laterals as small as 3-inches up to 70 feet from sewer mainline.
- Panning and Tilting, able to turn at right angles to pipe’s axis over an entire vertical circle (minimum pan of 270 degrees and rotation of 360 degrees).
- Self righting and self leveling.
- Having excellent lighting, suitable to allow clear picture of entire inner pipe wall extending at least 20 feet in front, including black High Density Polyethylene (HDPE) pipe.
- Operating in 100 percent humidity conditions.
3.4 SEQUENCE OF OPERATIONS

Perform work in two phases as listed.

Phase I  Pre-Inspection

   a. Perform internal video inspection with cleaning following OPERATION requirements below.
   b. Submit Videos, inspection records, and survey information to Owner promptly upon completion of pre video inspection work for evaluation.

Phase II  Post-Inspection

   a. Perform internal video inspection following repair and rehabilitation as indicated in the contract.
   b. Submit inspection Videos, inspection records, and survey information to Owner promptly upon completion of post video inspection work for evaluation.

3.5 OPERATION

Mains:

- Record section of sewer in its entirety with no breaks or interruptions.
- Show inside of manhole walls, manhole channel, and pipe connection to wall at both upstream and downstream manhole and lateral connections.
- Move through line at speed no greater than 60 feet per minute stopping for minimum 5 seconds to record lateral connections, mainline connections, defects, infiltration from connections, cracks or joints, along with features and points of interest.
- Maintain technical quality, sharp focus, and distortion free picture with excellent lighting.
- Pan, tilt, and rotate as necessary to best view and evaluate lateral connections, defects, features, and points of interest.
- Use power winches, powered rewinds, tractors, or other devices that do not obstruct camera view or interfere with proper documentation of sewer conditions to move camera through sewer.
- Use hydraulic jet nozzle if necessary to remove standing water from line.
- Eliminate steam in line for duration of inspection. Utilize blower as needed to defog sewer line.
- Provide measurement locations of defects and service laterals Measurements shall be accurate to within 0.2 feet.
- For pre inspection the allowable depth of flow is as follows:
  - 6-10 inch pipe  10% of pipe diameter
  - 12-24 inch pipe: 15% of pipe diameter
  - 27 inch and up pipe: 20% of pipe diameter
- Use plugs, dams, and bypassing if necessary using appropriate caution. Contractor shall monitor upstream manhole for signs of flooding or surcharging.
- For the final inspection after rehabilitation, maintain sewer main isolation by plugging or bypass pumping while camera is moving and recording.
  - Plugs: Secured to remain in place during inspection.
  - Conduct operations to prevent backups and sewer overflows.
  - Be responsible for cleanup, repair, fines, property damage costs and claims for any sewage backup, bypass spillage or sanitary sewer overflow.
- Stop camera at lateral connections and inspect with pan and tilt camera.
• For all laterals, Identify whether they are active or inactive, record building address at the
connection and confirm that laterals are active by obtaining flush, with or without dye, of
property owner’s commode or by using outside cleanout, if available.
• For the final post inspection, Stop camera (minimum 10 seconds) at beginning and end of
repairs and inspect repaired section.

Laterals:

• Move camera through lateral at uniform rate from mainline to property line or cleanout.
• Stop at each suspected defect to allow adequate evaluation and document.
• Note the address of the lateral and the distance from the upstream manhole on the video.

3.6 DOCUMENTATION

Submit original records, videos, logs, and electronic inspection data to Owner within 10 working
days of the completion of the immediate work.

Provide the following at minimum:

• Contract Number and Project Name and Contractor Name.
• Date and time (begin to end inspections).
• Weather conditions.
• Footage locations, clock position, and descriptions of taps, defects and estimated leakage
  rates for visible point sources of infiltration/inflow.
• Inside pipe diameter and type.
• Manhole identification (upstream and downstream manhole) and the street or ROW.
• For lateral inspections: the distance from upstream manhole and Address of each lateral
• 480x720 minimum resolution
• Electronic data shall be compatible with Microsoft excel.

3.7 VIDEO RECORDINGS

• Once recorded, video becomes property of the Owner.
• Use observation terminology during audio narration consistent with PACP, MACP and
  LACP.
• Clearly label each DVD/CD ROM as required in the DOCUMENTATION section and as
  approved by the Owner.
• Recording of single section of sewer on 2 DVDS is not acceptable.

Poor video quality (Includes but not limited to; grease or debris on lens, camera under water,
image too dark, washed out, distorted or out of focus, lines improperly cleaned or poor/no audio)
is unacceptable. Perform the video inspection again on the line and resubmit.
DIVISION 4 – BYPASS PUMPING

4.1 GENERAL

Under this item the Contractor is required to furnish all materials, labor, equipment, power, maintenance, etc. to implement a temporary pumping system for the purpose of diverting the existing flow around the work area when necessary.

The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor shall employ the services of a vendor who can demonstrate to the Owner that he specializes in the design and operation of temporary bypass pumping systems. The vendor shall provide at least five (5) references of projects of a similar size and complexity as this project performed by their firm within the past three years. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

The Contractor shall prepare with the vendor a specific, detailed description of the proposed pumping system and submit it and the vendor's references with his bid proposal.

The Contractor shall submit to the Owner detailed plans and descriptions outlining all provisions and precautions to be taken by the Contractor regarding the handling of existing wastewater flows. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials and all other incidental items necessary and/or required to insure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and permit conditions specified in these Contract Documents. No construction shall begin until all provisions and requirements have been reviewed by the Owner.

The plan shall include but not be limited to details of the following:

- Staging areas for pumps;
- Sewer plugging method and types of plugs;
- Number, size, material, location and method of installation of suction piping;
- Number, size, material, method of installation and location of installation of discharge piping;
- Bypass pump sizes, capacity, number of each size to be on site and power requirements;
- Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range shall be submitted);
- Standby power generator size, location;
- Downstream discharge plan;
- Method of protecting discharge manholes or structures from erosion and damage;
- Thrust and restraint block sizes and locations;
- Sections showing suction and discharge pipe depth, embedment, and special backfill;
- Method of noise control for each pump and/or generator;
- Any temporary pipe supports and anchoring required;
- Design plans and computation for access to bypass pumping locations indicated on the drawings;
- Calculations for selection of bypass pumping pipe size;
- Schedule for installation of and maintenance of bypass pumping lines;
- Plan indicating selection location of bypass pumping line locations.
### 4.2 Bypass Pumping Equipment

All pumps used shall be Silenced, fully automatic self-priming units that do not require the use of foot-valves or vacuum pumps in the priming system. The pumps may be electric or diesel powered. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows.

The Contractor shall provide the necessary stop/start controls for each pump.

The Contractor shall include one stand-by pump of each size to be maintained on site. Back-up pumps shall be on-line, isolated from the primary system by a valve.

Discharge Piping - In order to prevent the accidental spillage of flows all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Under no circumstances will aluminum "irrigation" type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the Owner.

### 4.3 BYPASS PUMPING SYSTEM DESCRIPTION

#### 4.3.1 Design Requirements:

Bypass pumping systems shall have sufficient capacity to pump a peak flow of 2 mgd. The Contractor shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow of the main can be safely diverted around the section to be repaired.

Bypass pumping system will be required to be operated 24 hours per day.

The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. One standby pump for each size pump utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.

Bypass pumping system shall be capable of bypassing the flow around the work area and of releasing any amount of flow up to full available flow into the work area as necessary for satisfactory performances of work.

The Contractor shall make all arrangements for bypass pumping during the time when the main is shut down for any reason. System must overcome any existing force main pressure on discharge.

#### 4.3.2 Performance Requirements:

It is essential to the operation of the existing sewerage system that there be no interruption in the flow of sewage throughout the duration of the project. To this end, the Contractor shall provide, maintain and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the sewage flow before it reaches the point where it would interfere with his work, carry it past his work and return it to the existing sewer downstream of his work.
The design, installation and operation of the temporary pumping system shall be the Contractor’s responsibility. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction.

The Contractor shall provide all necessary means to safely convey the sewage past the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances.

The Contractor shall maintain sewer flow around the work area in a manner that will not cause surcharging of sewers, damage to sewers and that will protect public and private property from damage and flooding.

The Contractor shall protect water resources, wetlands and other natural resources.

4.4 BYPASS PUMPING FIELD QUALITY CONTROL AND MAINTENANCE

Test: The Contractor shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to actual operation. The Owner shall be given 24 hours notice prior to testing.

Inspection: Contractor shall inspect bypass pumping system every two hours to ensure that the system is working correctly.

Maintenance Service: The Contractor shall insure that the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating.

Extra Materials: Spare parts for pumps and piping shall be kept on site as required. Adequate hoisting equipment for each pump and accessories shall be maintained on the site.

4.5 BYPASS PUMPING PREPARATION

Contractor is responsible for locating any existing utilities in the area the Contractor selects to locate the bypass pipelines. The Contractor shall locate his bypass pipelines to minimize any disturbance to existing utilities and shall obtain approval of the pipeline locations from the Town and the Owner. All costs associated with relocating utilities and obtaining all approvals shall be paid by the Contractor.

During all bypass pumping operation, the Contractor shall protect the Pumping Station and main and all local sewer lines from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the Pumping Station and main and all local sewer lines caused by human or mechanical failure.
4.6 BYPASS PUMPING INSTALLATION AND REMOVAL

The Contractor shall remove manhole sections or make connections to the existing sewer and construct temporary bypass pumping structures only at the access location indicated on the Drawings and as may be required to provide adequate suction conduit.

Plugging or blocking of sewage flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance of work, it is to be removed in a manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

When working inside manhole or force main, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.

The installation of the bypass pipelines is prohibited in all wetland areas. The pipeline must be located off streets and sidewalks and on shoulders of the roads. When the bypass pipeline crosses local streets and private driveways, the contractor must place the bypass pipelines in trenches and cover with temporary pavement or run the bypass pumping though culverts if applicable. Upon completion of the bypass pumping operations, and after the receipt of written permission from the Owner, the Contractor shall remove all the piping, restore all property to preconstruction condition and restore all pavement. The Contractor is responsible for obtaining any approvals for placement of the temporary pipeline within public ways from the Town.

Prior to dismantling and removal of the temporary pipe line and pumps the contractor shall flush the pumps and bypass line so that no wastewater or contaminated water or odor remains in the system.

Upon completion the contractor shall remove all pumps, piping and apparatus and restore the all areas to pre-construction conditions.
DIVISION 5 – GROUTING

5.1 GENERAL
The work in this Section consists of providing for the rehabilitation of defective, leaking pipe joints, some circumferential pipe cracks and other small pipe defects by the application of chemical grouting materials. Work shall be in Accordance with ASTM Designation F-2304-03. “Standard Practice for Rehabilitation of Sewers Using Chemical Grouting.”

5.2 QUALIFICATIONS
Materials: Chemical sealant shall have documented service of successful performance in similar usage, with a minimum of 12,000 joints grouted.
Contractor shall have documented service of successful performance in similar usage, with a minimum of 12,000 joints grouted.

5.3 SUBMITTALS
In addition to the requirements for Schedule and Shop Drawing submittals contained in the General Conditions, and in addition to the equipment and material submittals required elsewhere in this Specification, Contractor shall submit pump calibration information, field sealing records, certification of pressure sensing/monitoring equipment, current documentation of Contractor’s compliance with product manufacturer’s Safe Operating Practices Procedures (SOPP) as approved by the U.S. EPA. Further, upon request, the Contractor must submit proof of chemical supplier’s product liability insurance.

5.4 MATERIALS
Contractor shall provide a chemical sealant solution containing principal chemical sealant constituent, initiator (trigger) and catalyst specifically recommended for the purpose of sealing leaks in sanitary sewer lines and manholes.
Grout used shall be De Neef, Inc., AC400 or equal.
Contractor shall deliver materials to job site in undamaged, unopened containers bearing manufacturer’s original labels. Materials used as chemical grout shall be transported, stored, and placed in manner prescribed by manufacturer of those materials, as detailed in published data provided by manufacturer.

5.5 GROUTING EQUIPMENT
Contractor shall provide equipment consisting of closed-circuit television systems, necessary chemical sealant containers/tanks, pumps, regulators, valves, hoses, etc. and joint sealing packers for appropriate sizes of pipe designated to receive chemical grouting.
5.6 INSTALLATION

5.6.1. Cleaning

Prior to the application of chemical grouting materials, Contractor shall thoroughly clean the sewer designated to receive the chemical grouting. Cleaning shall constitute removal of all debris, solids, roots and other deposits in the sewer line; particularly at the sewer pipe joints.

5.6.2. Inspection of Pipelines

After cleaning and prior to application of chemical grouting materials, Contractor shall inspect the sewer designated to receive the chemical grouting. Sewer line inspection requirements are contained in the video inspection section of the specification.

5.6.3. Sewage Flow Control

Contractor shall provide for maintenance of flow in the affected portions of the sewer system during grouting of the sewer line. Requirements for sewage flow control and bypass pumping are contained in Bypass Pumping section of the specifications. Depth of flow shall not exceed that shown below for respective pipe sizes as measured in the upstream and downstream manholes when performing joint testing and sealing.

**Maximum Depth of Flow for Joint Testing/Sealing**

- 8 in. – 24 in. diameter pipe 15% of pipe diameter
- Pipe larger than 24 in. diameter. 20% of pipe diameter

5.6.4. Chemical Grout Application for Sealing Joints

Repairs shall take place at joints, cracks, holes, or similar points where active infiltration has been identified as directed and approved by the Owner. The repair shall be such that the original cross-sectional area and shape of the interior of sewer pipe shall not be permanently reduced or changed.

**5.6.4.1. Pressure Testing**

Contractor shall test each grouted joint or defect by isolating the area to be tested within the testing device and applying positive pressure into the joint and void area created by the test device. Contractor shall then introduce pressurized air into the isolated void created by testing device. Pressure shall be applied until it is determined that the pressure cannot be built in the void or until the test pressure of 1/2 psi per ft of depth plus four psi to a maximum of 10 psi is reached as recorded by the void pressure monitor. When either of these conditions is reached, Contractor shall shut off the air supply. If the required pressure cannot be developed, joint shall have failed the test. If the required test pressure in the void was increased to 1/2 psi per ft of depth plus four psi, rate of decay of this pressure shall not exceed 1 psi in 30 sec. The joint being tested will also have failed if the pressure drops more than 1 psi in 30 seconds. Failure of the joint indicates the need for sealing. Sealing shall be accomplished by Contractor as specified elsewhere in these Specifications.
5.6.4.2. Placement of Chemical Grout

Contractor shall position the sealing packer over the area of infiltration by means of a metering device at the surface and closed circuit television camera in the line. Accurate measurement of the location of the defect to be sealed shall be made, using the portion of sealing packer as "Datum" or measurement point or target. Such measurement to the target shall also be used to obtain necessary measurement for positioning the injection area of sealing packer over area to be sealed. Contractor shall expand the sealing packer sleeves using controlled pressures. Expanded sleeve shall seal against the inside periphery of pipe to form a void area at the point of infiltration, completely isolated from the remainder of the line. Contractor shall pump sealant materials into this isolated area through hose systems at controlled pressures which are in excess of groundwater pressures. Contractor shall pump as much grout as is field-required to seal any leaks and fill the voids. Grout shall break away from the packer and stay in place when the packer is deflated and moved from the point of infiltration. Upon completion of injection, Contractor shall retest the point of repair. If retesting shows the seal was not completely effective, Contractor shall repeat the sealing process until the defect successfully passes the pressure test. After sealing the entire sewer section, Contractor shall remove surplus grouting material from section at the immediate downstream manhole. If surplus grouting materials left in the sewer section by Contractor results in sewer surcharging and subsequent damage to public or private property, Contractor shall be responsible for damage to property and expenses incurred by Owner.

5.6.4.3. Gel Checks

Contractor shall make gel checks daily for each sealing vehicle to monitor both induction period and gel characteristics. Contractor shall also make checks for every mixed batch or at least twice per day if only one batch is used. Owner reserves the right to request adjustment of gel times or reject the entire batch if acceptable gel characteristics do not exist. Periodic gel checks shall also be made in the pipe (at request of Owner) by seating the sealing packer on the pipe barrel and filling the packer void with grout solutions. Pressure will then be monitored until a rise in pressure is observed, indicating that grout has gelled in the packer void. Contractor shall certify, for each of the sealing vehicles, results of required gel checks.

5.6.4.4. Field Records

Contractor shall keep field records for each sewer section prior to, during, and after completion of the chemical grouting operation. Records shall include information such as accurate locations, gel times, grout volumes, grout pressures, air temperatures, and joints not sealed due to close proximity to building service connections and sanitary sewer manholes.

5.7 WARRANTY

The Contractor shall guarantee the sealing of the pipe joint by the grout for one full year from the date of acceptance of the Owner to the extent that he will repair and/or re-grout any defects including, but not limited to, root penetration, signs of infiltration, and cracks in the pipe or grouting material, which may appear in the structure because of faulty design, workmanship, or material furnished by him.
DIVISION 6 – CURE IN PLACE PIPE LINING

6.1 – GENERAL

6.1.1 GROUND RULES

➢ Contract involves rehabilitation of wastewater collection pipelines with a structurally sound and impervious cast-in-place pipe lining which substantially maintains flow capacity.

➢ Contractor to:
  • Obtain necessary permits – road closing etc. and to provide traffic control.
  • Provide active tap verification – lateral launch, dye testing.
  • Set up and maintain bypass pumping. SSO’s and reporting are responsibility of contractor. Some bypasses may be lengthy.
  • Perform pipe line cleaning and pre video inspection, w/ bypass in place (preferred) or run jetter ahead of camera to pull flow out of the way.
  • Remove intruding taps of more than 0.5”.
  • Provide hydrophilic end seals and epoxy mortar required at MH terminations and the basin of the MHs so that a leak free liner is provided.
  • Prepare test specimens and provide testing results.
  • Collect cure data and provide curing logs.
  • Post video inspection w/ bypass in place. Provide both pre and post video on DVD in .MPG or equivalent format to be viewed on computer with windows media player.
  • Remove all pieces of cut liner and debris.
  • Control Odors and Chemical Exposure.
  • Provide a smooth pipe line: Wrinkles, bumps etc. Tolerance -> no more than 5% flow restriction allowed without reduced value or correction required.
  • Reinstate all active taps.
  • Restore any amenities which have to be disturbed due to the work.
  • Provide lining through intermediate MHs straight through channel as required.
  • Provide pre grouting as a contingency pay item for high infiltration lines.

6.1.2 RELATED SECTIONS

Cleaning
Bypass Pumping
Grouting (as required)
Video Inspection
6.1.3 DESCRIPTION (UV and HOT WATER)
A. Provide all materials, equipment, labor and incidentals for the installation and testing of cured-in-place pipe lining (CIPP) within the sewer main.
B. The sewer main CIPP process shall consist of inserting a resin-impregnated flexible tube into an existing sewer, expanding the tube out against the sewer pipe, and curing the tube to form a pipe liner. Curing shall be accomplished by applying ultraviolet light or circulating heated water to obtain the desired cure throughout the tube extending the full length from manhole to manhole.
C. The CIPP shall cure into a hard, impermeable liner of the specified thickness and form a structurally sound liner pipe with a uniformly smooth interior.

6.1.4 REFERENCE STANDARDS (UV and HOT WATER)
A. Comply with applicable provisions and recommendations of the following:
2. ISO 178 - Determination of Flexural Properties
4. DIN 761 - Glass Reinforced thermosetting plastics (GRP) pipes
5. ASTM D3567 - Standard Practice for Determining Dimensions of "Fiberglass" (Glass-Fiber-Reinforced Thermosetting Resin) Pipe and Fittings
6. DIN EN 13566-4 - Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks
7. ASTM F1743 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP)
8. ASTM F1216 - Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube
9. 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)

6.1.5 QUALIFICATIONS (UV and HOT WATER)
A. For each method of installation and curing used on this project, CONTRACTOR shall have a history of at least 30,000 linear feet of CIPP work in sewers using a similar resin and flexible tube and using the specific method of installation and curing being used.
B. For each method of installation and curing used on this project, the CIPP Work shall be supervised by a superintendent/foreman having previously supervised a minimum of 25,000 linear feet of CIPP using a similar resin and flexible tube and using the specific method of installation and curing proposed. References shall be provided. This person shall also be proficient in Microsoft excel, word, etc. and be able to use electronic mail and have ready access to electronic mail.
C. The entity performing the wet-out of the CIPP shall have been performing this type of work for a minimum of three years and previously wet-out at least 350,000 linear feet of CIPP.
6.1.6 DELIVERY, STORAGE, AND HANDLING (UV and HOT WATER)
A. Care shall be taken in shipping, handling and storage to avoid damaging the liner. Extra care shall be taken during warm weather construction. Any liner damaged in shipment shall be replaced as directed by the OWNER at no additional cost to OWNER.
B. While stored, the CIPP shall be adequately supported and protected. The CIPP shall be stored in a manner as recommended by the manufacturer and as approved by the Owner.

6.1.7 QUALITY CONTROL (UV and HOT WATER)
A. No change of material, design values, or procedures may be made during the course of the Work without the prior written approval of the Owner.
B. All liner to be installed under this Work may be inspected at the manufacturer plant(s) and wet-out facility for compliance with these Specifications by Owner. The Contractor shall require the wet-out facility's cooperation in these inspections.
C. At the time of manufacture, inspect each lot of liner for defects. At the time of delivery, the liner shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters, or deleterious faults.
D. The liner manufacturer shall have a Quality Management System registered with ISO 9001:2008 in place that will allow the Owner to monitor resin impregnation process data.

6.1.8 WARRANTY (UV and HOT WATER)
A. All lining work shall be fully guaranteed by the Contractor for a period of 1 year from the date of Final Acceptance unless otherwise stipulated in writing by the Owner prior to the date of Conditional Acceptance. During this period, all serious defects discovered by the Owner shall be removed and replaced by the Contractor in a satisfactory manner at no cost to the Owner. In addition to the Warranty Inspection specified under Section 7.3.9, the Owner may conduct independent television inspections, at its own expense, of the lining Work at any time prior to the completion of the guarantee period.

6.1.9 SUBMITTALS
A. Cured-In-Place Pipe:
   1. (UV and HOT WATER) Summary table of CIPP material properties, including short-term flexural modulus of elasticity, 50-year flexural modulus of elasticity, short-term flexural strength (bending stress), 50-year flexural strength (bending stress), and chemical resistance. Certified test reports shall be submitted verifying each value as described below
   2. (HOT WATER) Independent third party certified laboratory test reports demonstrating that the exact resin/liner combination to be used for this project meets the requirements for initial structural properties (ASTM D790) and chemical resistance (performed in accordance with ASTM F1216 Appendix X2).
   3. (UV) Independent third party certified laboratory test reports demonstrating that the exact resin/liner combination to be used for this project meets the requirements for initial structural properties (ISO 178 with wall thickness measured per DIN EN 13566-4) and chemical resistance (performed in accordance with ASTM F1216-Appendix X2).
   4. (UV and HOT WATER) Independent third party certified laboratory test reports demonstrating that the exact resin and liner to be used for this project has been tested for long-term flexural modulus of elasticity and long-term flexural strength (i.e. 10,000 hour creep testing performed in accordance with ASTM 2990 or DIN 761 for design conditions applicable to this project). When filled resins are proposed, complementary data of the
same data for unfilled resin shall also be provided. If the data submitted is not for the exact liner to be used on this project, submit a detailed description of the physical properties of both the liner used in the test and the liner to be used for this project to demonstrate that the two liners are comparable in terms of physical properties.

a. Test will be performed for 10,000 hours under test conditions and loadings described below. The data points from 1,000 hours to 10,000 hours, or such other time period as determined by the Owner based on the curve or slope of the plotted data, of the Long-term Flexural Modulus shall be extrapolated using a Microsoft Excel log-log scale linear regression analysis to determine the minimum service life performance of the resin-tube.

b. Testing will be conducted at:
   i. Temperature 21°C to 25°C
   ii. Relative humidity: 50% minimum
   iii. Load: Load will be calculated at 0.25% of the short term E-modulus as tested per ASTM D790 or ISO 178, or as approved by Owner.

5. (UV and HOT WATER) The name of the liner and resin manufacturer, the location of the facility where each was manufactured, and a list of appurtenant materials and accessories to be furnished.

6. (HOT WATER) Structural design calculations and specification data sheets listing all parameters used in the liner design and thickness calculations based on Appendix X1 of ASTM F1216 for each pipe segment with less than 10% ovality or based on the WRc Sewerage Rehabilitation Manual, Type II Design, Section 5.3.2.iii for non-round pipe or circular pipes with greater than 10% ovality. All calculations shall be prepared under and stamped by a Professional Engineer. Submit P.E. Certification Form for all CIPP design data.

7. (UV) Structural design calculations and specification data sheets listing all parameters used in the liner design and thickness calculations based on Appendix X1 of ASTM F2019 for each pipe segment with less than 10% ovality or based on the WRc Sewerage Rehabilitation Manual, Type II Design, Section 5.3.2.iii for non-round pipe or circular pipes with greater than 10% ovality. All calculations shall be prepared under and stamped by a Professional Engineer. Submit P.E. Certification Form for all CIPP design data.

8. (UV and HOT WATER) The quality management system for the wet-out facility must be registered in accordance with ISO 9001. It must ensure that proper materials and amounts are used in the resin saturation process and in liner shipping and storage. At a minimum, the quality control documentation should include resin lot numbers, volumes of resin, catalyst, enhancers, date of wet-out, storage / transportation controls, and quality assurance procedures. A checklist should be included documenting that each critical step in the resin impregnation process is checked off and initialed.

9. (HOT WATER) Installation quality control plan, including bypass pumping plans, mainline sewer cleaning plans, cleanliness requirements, liner shot plan and sequence, liner installation standard procedures (including, but not limited to, min./max. allowable installation pressures, times, and temperatures certified by the liner manufacturer), intermediate manhole exposed liner restraining method, boiler sizing calculations, temperature monitoring plan, odor control procedure, and plan to manage flow to/from laterals during lining.

10. (UV) Installation quality control plan, including bypass pumping plans, mainline sewer cleaning plans, cleanliness requirements, liner shot plan and sequence, liner installation standard procedures (including, but not limited to, minimum / maximum allowable installation pressures and speeds certified by the liner manufacturer), intermediate manhole exposed liner restraining method, light train sizing, temperature monitoring plan, odor control procedure, and plan to manage flow to/from laterals during lining.
11. (HOT WATER) Curing schedule for each shot, including heating, curing, and cool-down schedule.

12. (UV) Curing schedule for each shot.

13. (UV and HOT WATER) Available standard written warranty from the manufacturer of wet-out liner.

B. (UV and HOT WATER) Hydrophilic end seals and pre-liners to be used and method of installation.

C. (UV and HOT WATER) Contingency plan, including methods and equipment to be used to repair unacceptable liner defects and for removing failed liners. Plan for availability and accessibility of backup equipment such as air compressors and lateral reinstatement cutters.

D. (HOT WATER) Curing log, including CIPP temperatures, pressures, and times during the curing process to document that a proper cure has been achieved. Curing log shall list as a minimum the temperature of the hot water at the upstream and downstream manhole, the temperature of external thermocouples, and liner pressures.

E. (UV) Curing log, including CIPP temperatures, pressures, and times during the curing process to document that a proper cure has been achieved. Curing log shall list as a minimum the light train speed, liner pressures, and temperature of the internal liner surface.
6.2 – PRODUCT

6.2.1 DESIGN REQUIREMENTS

A. (UV and HOT WATER) The CIPP lining shall be a resin-impregnated flexible tube which is inserted into the sewer to be rehabilitated and cured-in-place by an acceptable curing method. The tube may have a suitable polyurethane membrane coating for protection of the interior surface and to provide a uniform, smooth flow surface and may be removed after installation and curing is completed. The resin shall be a liquid thermosetting resin and shall be suitable for the design conditions as well as the curing process.

B. (UV and HOT WATER) 50-Year Flexural Strength (ASTM D2990 or DIN 761): 2,500 psi minimum

C. (UV and HOT WATER) 50-Year Flexural Modulus (ASTM D2990 or DIN 761): 175,000 psi minimum.

D. CIPP Thickness

1. The required structural CIPP wall thickness shall be based, as a minimum:
   a. (HOT WATER) In accordance with ASTM F1216, Appendix X1, Design Considerations for a fully deteriorated or partially deteriorated host pipe, for a circular host pipe with 10% ovality or less
   b. (UV) In accordance with ASTM F2019, Appendix X1, Design Considerations for a fully deteriorated or partially deteriorated host pipe, for a circular host pipe with 10% ovality or less
   c. (UV and HOT WATER) In accordance with WRc Sewerage Rehabilitation Manual, Type II Design, Section 5.3.2.iii for non-round pipe or circular pipes with greater than 10% ovality
   d. (UV and HOT WATER) A safety factor of 2
   e. (UV and HOT WATER) A minimum service life of 50 years under continuous service
   f. (UV and HOT WATER) A modulus of soil reaction of 700 psi
   g. UV and HOT WATER) A soil density of 120 lbs/in3
   h. (UV and HOT WATER) A Poisson’s ratio of 0.3
   i. (UV and HOT WATER) An enhancement factor of 7
   j. (UV and HOT WATER) A groundwater elevation over the pipe equivalent to surface grade
   k. (UV and HOT WATER) Ovality for each segment as applicable
   l. (UV and HOT WATER) Live loads for each segment as applicable
   m. (UV and HOT WATER) Soil depth for each segment as applicable

2. (UV and HOT WATER) The flexural modulus and flexural strength used in the design shall be the values as rated for the specified service life and as submitted in Section 7.1.9. When filled resins are proposed, complementary data of the same data for unfilled resin shall be provided.

3. (UV and HOT WATER) The liner thickness of each pipe segment shall be determined by the CONTRACTOR and submitted per Section 7.1.9.

E. (UV and HOT WATER) Installed thickness of the CIPP shall be as calculated in Section 7.2.1 and evaluated per Section 7.3.8.

F. UV and HOT WATER) When cured, the liner shall form a continuous, tight fitting, hard, impermeable liner that is chemically resistant to chemicals found in domestic sewage/storm water.
G. (UV and HOT WATER) The liner shall be fabricated to a size that when cured will tightly fit the sewer being rehabilitated. Allowance for longitudinal and circumferential expansion shall be taken into account when sizing and installing the liner. Field verify all dimensions prior to delivery of the liner. The allowable contact tolerance between the liner and host pipe is 1.0mm. In cases where any space or gap between the outside surface of the liner and the inside surface of the existing pipe exceeds 1.0mm, the liner will be deemed deficient and corrective action will be required as determined by the Owner. Where irregularities of the existing pipe exist such as offset joints, protrusions, bumps, and deformations the irregularities remain after the sewer has been prepared in accordance with the Contract Documents, exception to the contact tolerance will be allowed in the irregularity zone. The exception shall not present an obstruction to sewage flow.

H. (UV and HOT WATER) The length of the liner shall be that deemed necessary by the CONTRACTOR to effectively carry out installation and seal the liner at the inlet and outlet of each manhole/structure as specified herein. The Contractor will field verify all lengths prior to construction.

6.2.2 FLEXIBLE TUBE
A. (HOT WATER) The tube shall consist of one or more layers of absorbent non-woven felt fabric that meets the requirements of ASTM F1216.
B. (UV) The tube shall consist of one or more layers of fiberglass laminate that meets the requirements of ASTM F2019.
C. (UV and HOT WATER) The tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the CIPP. No dry or unsaturated layers shall be present.
D. (HOT WATER) The felt content of the liner shall be determined by the Contractor or liner manufacturer, but shall not exceed 25 percent of the total impregnated liner volume.
E. (UV and HOT WATER) 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.

6.2.3 RESIN
A. (UV and HOT WATER) The liquid thermosetting resin shall saturate the tube and produce a properly cured liner which is resistant to abrasion due to solids, grit, and sand.
B. (UV and HOT WATER) Polyester, vinyl ester, or epoxy resin and catalyst system shall comply with the following requirements and that when properly cured meets the requirements of ASTM F1216. Resins created from recycled materials are not allowed.
C. (HOT WATER) Resin enhancers are allowed and may be used by the CONTRACTOR or liner manufacturer. The maximum amount of enhancer allowed is 30 pounds enhancer per 100 pounds resin. Submit data verifying amount of enhancer and certify the limit of enhancer has not been exceeded.
D. (HOT WATER) Resin enhancers shall utilize a suitable bond enhancing compound to increase the bond between resins and other materials. Submit certification that bond enhancing compound is suitable for use in aqueous environments.

6.2.4 HYDROPHILIC SEALS (UV and HOT WATER)
A. The hydrophilic water stop end seals shall be: bands that are 20mm wide, 4mm high, with a double lip on one side, and flat on the other side, Hydrophilic Seal Manufacturer: Hydrotite
Style SS-0215 H: 2 mm (.08") W: 15 mm (.59"), Bonding of Hydrotite can be accomplished using a contact adhesive compatible with chloroprene rubber and a thin metal fish tape. On rough concrete surfaces, GREENSTREAK 7300 Epoxy or Leakmaster should be used to smooth the surface and to adhere Hydrotite.

OR

B. LMK’s Insignia™ Hydrophilic End Seal Sleeves or Equivalent (PREFERRED)

6.2.5 EPOXY MORTAR

Epoxy mortar shall be epoxytec CCP or approved equal.
6.3– EXECUTION

6.3.1 PREPARATION

A. NOTIFICATIONS

The CONTRACTOR has the sole responsibility of notifying the public of the work to be done. Each home or business connected to the sewer must be informed via written notice prior (48 hours) to work being commenced. (see notification in general conditions) The CONTRACTOR must also leave contact information so the public may call with questions or concerns about the project. Upon completion of the work, immediately reinstate all services and notify the property owner(s) that service is again available.

B. MAINTENANCE OF SERVICE

Maintain commercial and residential sewer service during the installation process, if necessary to properly complete the work, the CONTRACTOR may interrupt flow from services. The CONTRACTOR assumes all responsibility for blockages, backups or damages caused to public or private property as a result of the interruption of service, whether caused by the CONTRACTOR’S or property owner’s actions.

C. TRAFFIC CONTROL shall be provided as required.

D. (UV and HOT WATER) Review OWNER’s television inspection logs and/or conduct additional pre inspection of the pipes to plan rehabilitation work. Determine the location of all active service connections prior to lining. Dye test to verify all active service connections. The CONTRACTOR shall not reopen taps that are not active.

E. (UV and HOT WATER) Clean pipes prior to Pre-Construction Inspection, such that the pipes are free of roots, grease, sand, rocks, sludge, tuberculosis (to a tolerance of 0.25 inches projection) and other debris.

F. (UV and HOT WATER) Remove intruding taps and seal material prior to Pre-Construction Inspection.

G. (HOT WATER ONSITE WETOUT ONLY) Conduct Pre-Construction Inspection. Submit and obtain Owner’s approval of Pre-Construction Inspection prior to wetting out liner. Inspect and confirm the inside diameter, alignment and condition of each segment to be lined. Use the data and information collected from this inspection to verify the size of the liner and refine the installation techniques. If unknown physical conditions in the work area are uncovered during the investigation that materially differ from those ordinarily encountered, notify the Owner. All required environmental permits mandated from local, state, and federal levels must be obtained and kept onsite by the Contractor.

H. (UV and HOT WATER) Conduct Pre-Construction Inspection. PROVIDE VIDEO PRE INSPECTION with bypass in place or with camera just behind the jetter pushing the flow so flow channel is visible. Submit and obtain Owner’s approval of Pre-Construction Inspect. Inspect and confirm the inside diameter, alignment and condition of each segment to be lined. Use the data and information collected from this inspection to verify the size of the liner and refine the installation techniques. If unknown physical conditions in the work area are uncovered during the investigation that materially differ from those ordinarily encountered, notify the Owner.

I. (UV and HOT WATER) As required, provide for continuous flow around the section of pipe that is to be lined. The pump and bypass lines shall be of adequate capacity and size to handle the flow of the sewers. The proposed bypassing system shall be in accordance with the bypass section of this specifications and reviewed in advance by the Owner. The review of the bypassing system by the Owner shall in no way relieve the Contractor of his responsibility and liability.
J. (UV and HOT WATER) Clear the line of obstructions such as solids or broken pipe that will prevent the insertion of the liner. If inspection reveals an obstruction that cannot be removed by the conventional cleaning equipment, make an excavation and repair the obstruction. Excavation work shall be approved by the Owner prior to commencement of the work and shall be paid under a Change Order.

K. (HOT WATER) For pipe segments found to have any actively leaking defects that would be categorized as Runners or Gushers by the PACP Defect Rating Codes, grout affected joints on said pipe segment if instructed by the Owner. When instructed by the Owner, render the pipe free of Runners or Gushers. Payment for grouting joints in pipes to be lined, when directed by the Owner, shall be paid as Contingent Packer Injection Grouting of Pipe Joints Prior to CIPP Rehabilitation. Remove pockets of water from the pipe using appropriate flushing techniques.

L. (UV and HOT WATER) In presence of Owner, perform a pre-lining CCTV inspection immediately prior to CIPP lining to demonstrate that the pipe is clean and free of roots, grease, sand, rocks, sludge, PACP Runners or Gushers, pockets of water, or structural impediments that would affect long-term viability of the pipe liner. Obtain Owner's verbal approval of the acceptability of the existing pipe condition prior to installation of the CIPP.

M. Prepare for test specimens insitu and plates samples. (See section 7.3.7) If lining though a manhole and leaving the bottom half of the liner in place in the MH, use a piece of PVC pipe cut in half to form a "clam shell" place over the channel and hold in place with sandbags, cut the top section of the liner in the MH out for the restrained sample. For other cases use a short segment of pipe in the downstream manhole to line though for the test specimen.

6.3.2 BYPASS PUMPING (UV and HOT WATER)

SEE BYPASS SECTION for full bypassing specifications

Bypass pumping systems shall be used and operated in accordance with NASSCO Specifications. The bypass pumping system capacity must be sized to meet all potential flows. The CONTRACTOR will be held solely responsible for any damage caused by flooding and will take care to avoid this occurrence. The system must be kept in service for each section until that section is completed and ready to return to service. The CONTRACTOR is responsible for all installation, operation, and maintenance of the system. Manpower, fuel, and necessary utilities required by the systems must be provided and paid for by the CONTRACTOR. Standby pumping must be available and achieved by backing up pumps size for size. This will allow for one hundred percent (100%) backup capacity in case of emergency situations or equipment malfunction. Silenced pumps shall be used when residential properties, hotels, clinics etc. are less than 200 feet away.
6.3.3 CIPP INSTALLATION PROCEDURES

Weather and site conditions—Contractor shall review the weather forecast and groundwater conditions prior to commencement of liner installation. When the anticipated weather and groundwater conditions are such that the resulting flows and infiltration may impact the capacity of the by-pass pumping system or otherwise adversely affect the liner installation the Owner shall be notified and the installation delayed until favorable conditions for lining are present.

A. (UV and HOT WATER) Cutters: Maintain two working lateral reinstatement cutters at the job site at all times. Lining work shall not commence if the Contractor does not have the required number of working cutters on site. No additional time or compensation shall be awarded to the Contractor in the event that work is stopped due to the Contractor’s failure to comply with this requirement.

B. (HOT WATER) Material Saturation: Designate a location where the flexible tube will be impregnated with resin. Thoroughly saturate the flexible tube prior to installation. For tubes with exposed resin faces, add five percent excess resin to account for resin migration in pipe defects and joints and resin loss through the ends of the liner. Adjust roller gap setting so that the excess resin is uniformly distributed throughout the length of the liner. Wet-out logs shall provide proper documentation that excess resin was added. Tubes that have a coating between the inside surface of the host pipe and the exterior surface of the tube do not require excess resin. A catalyst system, or additive compatible with the resin and flexible tube, may be used as recommended by the manufacturer and with approval of the Owner. All required environmental permits mandated from local, state, and federal levels must be obtained and kept onsite by the liner manufacturer. The liner manufacturer must be registered in accordance with ISO 9001:2008 for its Quality Management System.

C. (UV) Material Saturation: Designate a location where the flexible tube will be impregnated with resin. Use a resin bath to thoroughly saturate the flexible tube prior to installation. All required environmental permits mandated from local, state, and federal levels must be obtained and kept onsite by the liner manufacturer. The liner manufacturer must be registered in accordance with ISO 9001:2008 for its Quality Management System.

D. (UV and HOT WATER) Hydrophilic Water Stops: Insert continuous or properly trimmed hydrophilic water stops at each manhole opening, centered within the intersection of the host pipe and the manhole wall. Trimmed water stop edges shall be butted up against each other at the crown of the pipe using a 45° miter cut. Water Stops with any gap between the ends will not be accepted. If defects in the host pipe near the manhole are such that the end seal will not form a watertight seal between the liner and host pipe, apply epoxy mortar to the defects in the host pipe to provide a smooth surface to receive the end seal.

E. (UV and HOT WATER) Insertion: Insert flexible tube through an existing access way. The liner material shall be inserted through a manhole by means and method required by the manufacturer, and shall be fully extended to the lower manhole. Where applicable, insert the tube such that the seam of the liner is positioned at the six o’clock position. Use only lubricants approved by the tube manufacturer. Make allowance for circumferential stretching during inversion. Make allowances for longitudinal stretching during pull-in or inversion. Do not utilize overlapped layers of material in longitudinal seams that cause lumps in the final product.

F. (HOT WATER) Pressure: The pressure head used during the installation process shall be sufficient to hold the liner tight to the pipe wall and prevent wrinkles or bubbles in the cured liner. The same head shall be great enough to prevent infiltration from entering the pipeline during the curing process. The pressure head shall be maintained sufficiently long enough to allow pockets of water to exfiltrate through the host pipe and prevent lifts in the liner and resin washout.
G. (UV) Pressure: The pressure used during the installation process shall be sufficient to hold the liner tight to the pipe wall and prevent wrinkles or bubbles in the cured liner. The same pressure shall be great enough to prevent infiltration from entering the pipeline during the curing process. The pressure shall be maintained sufficiently long enough to allow pockets of water to exfiltrate through the host pipe and prevent lifts in the liner and resin washout.

H. Curing:

1. (UV and HOT WATER) Follow submitted cure schedule in curing of liner.

2. (UV and HOT WATER) Continuously monitor liner temperatures.

3. (HOT WATER) After insertion is completed, apply a suitable recirculation system capable of delivering hot water, as required by the liner system manufacturer, uniformly throughout the section to achieve a consistent cure of the resin. Maintain the curing temperature or exposure times as recommended by the liner system manufacturer. Prevent excessive temperatures that could scald or bubble the liner. Scalded or blistered liner will be rejected if, in the opinion of the Owner, the performance of the liner is compromised.

   a. (HOT WATER) Monitor temperature at intervals no greater than 10 feet. Monitor temperatures at the bottom of the pipe. Temperature must reach 180°F or as approved by the Owner at the upstream manhole before a minimum four (4) hour cure time F or as approved by the Owner is initiated. A temperature of 125°F F or as approved by the Owner at the downstream manhole must be maintained for a minimum of one (1) hour.

      1. Manufacturer: Zia CIPPI System Part Number: P4016770 or equivalent.

   2. (UV) Fit suitable thermal monitors to light train, such as infrared sensors, to gauge the initiation of the curing cycle. Monitor the curing initiation at intervals no greater than 30 seconds.

   3. (UV and HOT WATER) Continue curing uninterrupted until the desired product is achieved.

   4. (HOT WATER) Provide for vapor tight connections in the downstream manhole such that no vapors enter downstream pipes. Alternatively and at no additional cost to the Owner, provide styrene odor reducing agents, venting, and downstream plugs sufficient to prevent water vapors, styrene, or other odors from entering downstream buildings.

   5. (UV) Provide inner and outer film materials that inhibit steam, styrene, or other odors from entering downstream buildings.

I. (HOT WATER) Cool Down: Initiate a controlled cool-down to the liner to a temperature below 110°F, in accordance with the cure schedule. Maximum cool down rate shall be 0.5°F per minute. Take care in release of the pressure column so that a vacuum will not develop that could damage the newly installed liner. Do not discharge water in excess of 100°F into the sewer system.

J. (HOT WATER) Disposal: Cure water with over 2.1ppm styrene should be disposed of in accordance with local and state regulations.

K. (UV and HOT WATER) Finished Pipe: Provide a finished CIPP that is continuous and free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes, delamination, bubbles, soft spots, and wrinkles at any location totaling more than 5% of host pipe inside diameter.

L. (UV and HOT WATER) Service Connections: Reopen all of the existing active service connections in each length of sewer immediately following installation of the liner. Reopen active service connections from inside the sewer by means of a remote controlled, CCTV assisted cutting device appropriate for the liner material and the rehabilitated sewer pipe. Each active service connection shall be cut completely open and shall have smooth edges with no protruding material capable of hindering flow or catching and holding solids contained
in the flow stream. If the service connection cannot be fully reopened due to time constraints, open each service connection to a minimum of 90% before the end of each working day. Partially opened service connections must be entirely opened by no later than the next working day.

M. (UV and HOT WATER) Inactive Service Connections: Do not reopen capped or inactive lateral connections. {CONTRACTOR shall have previously performed dye testing and lateral launching to determine inactive and capped taps and provided data to Owner} The Owner will VERIFY locations of active and inactive service connections.

6.3.4 TRIMMING AND FINISHING AT MANHOLES (UV and HOT WATER)
A. Neatly and smoothly trim the finished ends of the liner to within two inches of host pipe end. Do not leave any rough edges that may catch debris. Do not leave any portion of CIPP within the manhole channel (unless directed to line through a MH and leave the bottom half of the cast in place liner as a channel).
B. Provide a smooth transition between the existing manhole channel invert and the effluent liner using epoxy mortar or other approved material to prevent settling of sediments or debris from catching on the liner.
C. Use epoxy mortar to make a seal around the liner and bond the liner to the host pipe, channel and MH wall.

6.3.5 POST-INSTALLATION INSPECTION OF COMPLETED WORK (UV and HOT WATER)
A. Provide Post-construction Inspection video documentation showing completed work. Perform post-construction inspection no later than 30 days after the completion of lining work.
B. Correct all defects discovered during the television inspection before Conditional Acceptance. After the defects are corrected, repeat the post-construction Inspection for that sewer line.

6.3.6 FINAL CLEANUP (UV and HOT WATER)
A. Upon completion of rehabilitation work and testing, clean and restore project area affected by the Work.
6.3.7 QUALITY CONTROL TESTS

A minimum of one sample for each diameter size, and also one additional sample for every additional 1000 feet of each diameter size is required. Contractor shall maintain a chain of custody on all samples and send them to the testing laboratory promptly and return results within 30 working days of the segment completion.

A. (HOT WATER) For each installation of CIPP in each size diameter collect a restrained pipe sample. Collect an additional sample for every 1000 ft increment of additional lining in each size diameter.

B. Place a section of PVC pipe on the B-Side end (opposite of insertion side) of the liner in the downstream manhole. Select PVC material and size to match the inside diameter of the sewer being lined as closely as practical. The length of PVC pipe shall be equal to the length of the two required samples plus 12 inches, minimum. Run the impregnated tube through the pipe and cure under restrained conditions. If lining though a manhole and leaving the bottom half of the liner in place in the MH, it is permissible to use a piece of PVC pipe cut in half to form a “clam shell” placed over the channel and hold in place with sandbags, and then to cut the top section of the liner in the MH out for the restrained sample.

C. (UV) For each installation of CIPP in each size diameter collect a restrained pipe sample. Collect an additional sample for every 1000 ft increment of additional lining in each size diameter.

D. Ultraviolet cured liners: Cut a section of liner from the same portion of liner to be installed in the ground. Insert one section of light train in the restraint system above ground and cure the liner under similar conditions as those of the liner installed in the ground.

E. (UV and HOT WATER): Cut at a minimum, dependant on the testing required, two cylindrical samples from the center of the restrained pipe sample. Each sample shall be a minimum of 12 inches long or 25 times the CIPP thickness, whichever is greater. Label samples with the contract number, upstream and downstream MH numbers, date of installation, street location, segment number(s), and specified thickness. Deliver one sample to (TESTING LAB) after notifying Owner. Hang the second sample from the top rung in the manhole at the downstream end of the liner. Hang sample in a secure manner by nylon rope, sling, or other non-abrasive method. Do not puncture sample. In waterproof, indelible ink, label the sample in the manhole with “Do not remove before (specify date)”. The date specified shall be two years after the date of liner installation unless otherwise directed by the Owner. If there is no rung available in the manhole, hang sample in an upstream or downstream manhole and inform Owner of sample storage location. Contractor may elect to take additional samples at no additional cost to the Owner. The Contractor is responsible for the cost of all shipping and testing. The Contractor is responsible for the chain of custody and for providing such to the Owner.

F. (UV and HOT WATER) The following tests at the following minimum frequencies will be performed by the Owner on CIPP liners installed. The Owner may elect to perform additional testing. The Contractor may, at his discretion and cost, conduct additional testing to improve the resolution of performance test characterization. Any testing Contractor elects to perform shall be performed by an independent, certified ISO 17025 testing facility or Owner-approved equal.

1. (HOT WATER) Short-term Flexural (Bending) Properties - The initial tangent flexural modulus of elasticity and flexural yield strength measured in accordance with ASTM D790.
2. (UV) Short-term Flexural (Bending) Properties - The initial tangent flexural modulus of elasticity and flexural yield strength measured in accordance with ISO 178 and wall thickness in accordance with DIN EN 13566-4.
3. (HOT WATER) Wall thickness shall be measured in accordance with ASTM D3567.
4. (UV) Wall thickness shall be measured in accordance with DIN EN 13566-4.
5. (UV and HOT WATER) Chemical Resistance - The chemical resistivity of the CIPP measured in accordance with ASTM D543 Practice A, Procedure I. The reagents to be used are defined in ASTM F1216 Appendix X2.

6.3.8 CIPP ACCEPTANCE (UV and HOT WATER)

A. Acceptance of the CIPP shall be based on the Owner’s evaluation of the resin impregnation quality control reports, curing logs, post-construction inspection video, and laboratory test results for the installed pipe samples, which shall demonstrate:

1. Compliance with the required CIPP physical properties and thickness.
2. Observed groundwater infiltration of the liner is zero in wet weather conditions.
3. All active service connections are open and clear and all inactive taps are not cut out.
4. There is no evidence of excessive wrinkles, splits, cracks, breaks, lifts, kinks, scalds, blisters, delaminations, bubbles, crazing or other defects in the liner.
5. Achieving the minimum service life as determined by using the actual thickness and short term flexural modulus of elasticity as measured at each liner installation and modified by the creep retainage measured by the representative sample’s ASTM D2990 or DIN EN 761

B. If any defective liner is discovered after it has been installed, it shall be removed and replaced with either a sound liner or a new pipe at no additional cost to the Owner. The Contractor shall be responsible for costs of additional testing required to confirm compliance with these requirements. Obtain approval of the Owner for method of repair, which may require field or workshop demonstration.

C. For liners with defects, if the Contractor elects to excavate and repair defects in the liner, cut and remove the defective section of liner plus the host pipe to a minimum of two feet beyond each end of the defective liner. Use SDR 26 PVC to replace the removed liner and host pipe. Align invert of point repair with invert of CIPP. On either side of the proposed repair, carefully remove the host pipe from around the existing sound liner to expose a minimum of five inches of sound liner or as needed for repair coupling. Use stainless steel shielded flexible repair couplings to connect the new PVC directly to the sound liner. Provide repair couplings custom-fabricated specifically to fit the outside diameter of the host pipe and CIPP to assure a watertight connection. Haunch all exposed liner and new PVC pipe to the springline with pipe bedding material. Cover with concrete all exposed liner and repair couplings a minimum of six inches on either side of the pipe from the springline to six inches above the pipe. Place AASHTO #67, as approved by the Owner a minimum of eight inches on either side of the pipe from springline of new PVC pipe to eight inches above the pipe.

D. If the Contractor elects to repair defects in the liner using trenchless methods, remove the defective sections of liner for the full circumference to a minimum of six inches beyond each end of the defective liner or as approved by the Owner. Install a cured-in-place point repair that matches or exceeds the short and long-term material properties of the existing liner and must have the appropriate thickness to withstand the criteria for that particular liner. A minimum of twelve inches of overlap is required on either end of the repair, with
hydrophilic bands placed six inches from either end of the repair (i.e., centered on each overlap). Should the proposed cured-in-place point repair and hydrophilic end seals reduce the inside diameter of pipe to an unacceptable diameter, the Owner retains the right to require alternative materials for the repair or to have the Contractor perform an excavated repair, at no additional cost to the Owner.

E. At the Owner’s option, the Owner may conduct an evaluation of the diminished value of any defective liner as described below and recommend a reduced payment for the liner. At his option, Contractor may accept the recommended reduced payment or address all defective conditions as provided in Section 7.3.8 until an acceptable condition is achieved. Acceptance of reduced payment may necessitate the Contractor making a refund payment to the Owner.

1. For liners that have observed groundwater infiltration, poorly opened lateral taps, or excessive wrinkles, splits, cracks, breaks, lifts, kinks, scalds, blisters, delamination, crazing, or other defects in the liner, Owner will make an estimation of reduced value. Reduced value will be calculated by the following criteria:

<table>
<thead>
<tr>
<th>Score</th>
<th>Hydraulic Condition — (55% of CIPP Value)</th>
<th>Structural Condition — Applies to Defects Above the Springline (25% of Value)</th>
<th>O&amp;M Condition — Applies to Defects Below the Springline (20% of CIPP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>None</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering less than 1% of liner length</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering less than 1% of liner length</td>
</tr>
<tr>
<td>4,5</td>
<td>Up to 5 pinholes with staining or scalding of interior coating over less than 1% of liner length</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering less than 1% of liner length</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering less than 1% of liner length</td>
</tr>
<tr>
<td>4</td>
<td>Multiple pinholes with staining, or scalding of interior coating or other minor defects greater than 1% but less than 10% of liner length; minor leakage from one end seal.</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering more than 1% but less than 5% of liner length</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering more than 1% but less than 5% of liner length</td>
</tr>
<tr>
<td>3</td>
<td>Active leakage (PACP 1W, ID) through pinholes, or scalding of interior coating or other minor defects greater than 10% but less than 20% of liner length; minor leakage from both end seals</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering more than 5% but less than 10% of liner length, or defects greater than 10% of the liner ID and less than 1% of the liner length</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering more than 5% but less than 10% of liner ID, or defects greater than 10% of the liner ID and less than 1% of the liner length</td>
</tr>
<tr>
<td>2</td>
<td>Active leakage (PACP 1R, 1G) through pinholes, or scalding of interior coating or other minor defects greater than 20% of liner length; one defective end seal (i.e. exposed at pipe end, separated)</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering more than 10% of liner length, or defects greater than 10% of the liner ID and more than 1% but less than 5% of liner length</td>
<td>Defects greater than allowable size but less than 10% of liner ID and covering more than 10% of liner length, or defects greater than 10% of the liner ID and more than 1% but less than 5% of liner length</td>
</tr>
<tr>
<td>1</td>
<td>One end seal missing; both end seals defective</td>
<td>Defects greater than 10% of liner ID and more than 5% of liner length.</td>
<td>Defects greater than 10% of liner ID and more than 5% of liner length.</td>
</tr>
</tbody>
</table>

For example, the reduced value of CIPP that has a Hydraulic Condition score of 4.5, a Structural Condition score of 3, and an O&M Condition of 5 would be calculated by the following:

Reduced Value = \( \frac{4.5}{5} \times 55\% + \frac{3}{5} \times 25\% + \frac{5}{5} \times 20\% \) = 84.5% of full bid price
2. For liners that do not meet thickness, short-term flexural modulus of elasticity, short-term flexural strength, long-term flexural strength, or long-term flexural modulus of elasticity requirements, partial payment will be determined as follows.

   a. For each of these given pipe segments, partial payment will be determined by multiplying the price for that liner by the actual installed liner thickness divided by the calculated required thickness of the liner. Calculated required liner thickness will be determined using the actual installed liner properties as measured by the quality control tests required in paragraph 3.7 and appropriate applicable formula from ASTM F1216, Appendix XI. No payment over 100% of the value of the CIPP will be made.

6.3.9 WARRANTY INSPECTION (UV and HOT WATER)

A. Owner provided CCTV inspection 12 months after acceptance of completion of CIPP work showing all completed work. Actual period for inspection shall be determined by the Owner and will ideally be conducted during high groundwater conditions. Contractor will be provided with 60 days notice prior to period of inspection. Conduct all inspections in the presence of the Owner.

B. Correct all defects discovered during the warranty period at no additional compensation. After the defects are corrected, inspect the sewer again at no additional compensation.

C. For CIPP liners that did not meet specification and a negotiated reduction in price was agreed upon by the Contractor and the Owner prior to Conditional Acceptance, this out-of-specification condition becomes the basis upon which future corrective actions during the bonding and warranty periods is based. The physical record of said condition will be the post-rehabilitation inspection submitted by the Contractor and accepted by the Owner. Only defects beyond those in place at the time of the negotiated price reduction will be considered the Contractor’s responsibility.

D. If additional defects are discovered during the bonding and warranty, the Owner will request the Contractor to correct these additional defects or request an additional price reduction. If, in correcting these defects, the Contractor corrects the previous defects (for which the negotiated reduction was incurred), the Owner shall pay the Contractor the difference between the originally negotiated reduced value of the liner and the new, improved/corrected value of the liner, the value of which will be solely determined by the Owner. No payment over 100% of the bid price of the liner will be made.

E. The Owner retains the right to either demand corrective action to address the additional defects or to offer the Contractor a further negotiated reduction in the value of the liner. The Contractor retains the right to correct the defective liner at any point during the bond and warranty period and receive full payment for the liner. The acceptability of all repairs and the finished value of liner after said repairs continue to be solely the Owner’s determination.
DIVISION 7 – WORK TO BE COMPLETED

SECTION 7.1

Table 1. CIPP Segment Listing

<table>
<thead>
<tr>
<th>Description</th>
<th>Location</th>
<th>Size (in)</th>
<th>Segments</th>
<th>Length (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MH N43 to MH N46</td>
<td>Thompson Court</td>
<td>10</td>
<td>3</td>
<td>1180</td>
</tr>
<tr>
<td>MH N36 to MH N41</td>
<td>Graystone Drive</td>
<td>10</td>
<td>5</td>
<td>990</td>
</tr>
<tr>
<td>MH 26 to MH 30</td>
<td>S Main Street</td>
<td>8</td>
<td>4</td>
<td>1080</td>
</tr>
<tr>
<td>MH K1 to MH N3</td>
<td>Kinsey Heights / BOE Property</td>
<td>8</td>
<td>3</td>
<td>1080</td>
</tr>
<tr>
<td>MH N32 to MH N36</td>
<td>Della Ln / Graystone Drive</td>
<td>10</td>
<td>4</td>
<td>960</td>
</tr>
<tr>
<td>MH K5 to MH K19</td>
<td>Kinsey Heights / Lanafiel</td>
<td>8</td>
<td>7</td>
<td>1320</td>
</tr>
<tr>
<td>MH K8 to MH K12</td>
<td>Kinsey Heights / Lanafiel</td>
<td>8</td>
<td>2</td>
<td>410</td>
</tr>
<tr>
<td>MH K4 to MH K26</td>
<td>Kinsey Heights / Carroll</td>
<td>8</td>
<td>1</td>
<td>290</td>
</tr>
<tr>
<td>14 Total Manholes</td>
<td>Various</td>
<td></td>
<td></td>
<td>140</td>
</tr>
</tbody>
</table>

* All lengths and diameters shown are approximate and need to be field verified.
DIVISION 8 – CONTRACT

THIS CONTRACT made and entered into on this _____ day of_______, 2020, by and between the Town of BOONSBORO, MARYLAND a municipal corporation, by its duly authorized representative, (hereinafter referred to as “the Town”) and ________________________, a corporation/individual duly licensed as a contractor in the State of Maryland (hereinafter referred to as "Contractor"), and holding a current State of Maryland business license.

8.1 RECITALS

A. The Town requested bids for the COLLECTIONS SYSTEM REHABILITATION PROJECT Phase 2.

B. Contractor, in response to the above-mentioned bid request, has submitted to the Town, in the manner and at the time specified, a proposal in accordance with the terms of the Town’s request.

C. The Town, has examined and canvassed the proposals submitted in response to the advertisement, and as a result of that canvas has determined and declared Contractor to be best suited to perform the work as described in the request. A copy of contractor’s proposal is attached to this Contract and incorporated by reference herein. Now, therefore, in consideration of the compensation to be paid to Contractor and the mutual agreements contained in this Contract, Contractor and the Town agree as follows:

SECTION 8.1.1 STATEMENT OF WORK

Contractor shall (a) furnish at its own cost and expense all tools, equipment, supplies, materials, transportation and other necessary accessories, services and facilities as required; (b) provide and perform all necessary labor in a substantial, skillful and workmanlike manner; and (c) execute and complete the described collection system rehabilitation work in accordance with the Instructions to bidders, Drawings, Bid Package, and Specifications. No subletting of the contract is allowed without the approval by the Town.

SECTION 8.1.2 COMPLIANCE WITH APPLICABLE LAW

Contractor and every subcontractor or person doing or contracting to do any work contemplated by this Contract shall keep himself/herself fully informed of all federal and state laws and all municipal ordinances and regulations in any manner affecting the work or performance of the terms of this Contract and shall be held to comply with all requirements of applicable state and federal laws and municipal ordinances and regulations, including without limitation all federal and state wage and safety laws and Occupational Safety and Health Administration (OSHA) requirements.
SECTION 8.1.3 INSURANCE AND LICENSING
Contractor shall not commence work under this Contract until Contractor has obtained and furnished to the Town evidence of all insurance and licensing required under this section. Similarly, Contractor shall not allow any approved subcontractor to commence work on his/her subcontract until subcontractor has obtained and provided evidence to the Town of the insurance and licensing required hereunder. The following insurance and licensing shall be required of the contractor and every subcontractor or person doing or contracting to do any work contemplated by this Contract:

a. Workers’ compensation insurance for all employees engaged in work at the site of the project/improvement.

b. Liability and property damage insurance (Minimum $1,000,000 per occurrence) to protect Contractor and all of Contractor’s approved construction subcontractors from claims for damages for personal injury, accidental death and damage to property.

c. Certificate of Liability Insurance naming the Town of Boonsboro as the additional insured for all work performed by the Contractor insured during this contract period.

SECTION 8.1.4 INDEMNIFICATION
Contractor and every subcontractor or person doing or contracting to do any work contemplated by this Contract shall indemnify and hold harmless the Town of Boonsboro, Maryland, a municipal corporation, its agents, representatives, municipal servants and employees, against any claim or liability arising from or based on the violation of any federal, state or municipal laws, ordinances or regulations, or any accident, injury or damage to persons or property.

SECTION 8.1.5 PERFORMANCE, COMPENSATION AND COMPLETION OF WORK
The work shall be subject to the inspection of the Town Manager or authorized representative, who shall determine the satisfactory performance of the contractor. Request for payment shall be submitted at the completion of the project (or pay period) by the Contractor. The request for payment shall be itemized and it submitted and signed by the Town Manager or authorized representative. A 10% RETAINAGE will be held for partial payments.

If any unsatisfactory condition or damage develops within the time of this contract due to materials or workmanship that are defective, inferior or not in accordance with the Contract, Contractor shall, whenever notified by the Town, immediately remedy such in a condition satisfactory to the Town and make repairs as necessary.
PERFORMANCE, COMPENSATION AND COMPLETION OF WORK CONTINUED

If contractor fails to proceed promptly to comply with the terms under this Contract, Contractor agrees that the Town may have such work performed as the Town Manager considers necessary to perform the work and Contractor shall promptly reimburse the Town such sums as were expended in completing the work.

If it becomes necessary for the Town to employ legal counsel to enforce the terms of this contract, Contractor agrees to pay the Town’s reasonable attorney fees and costs.

SECTION 8.1.6 DAMAGE TO PRIVATE PROPERTY

The Town of Boonsboro, being a small town, the residents are accustomed to good work and service and quick response from the Town and its contractors. Contractors must also be aware of their responsibility for damage to private property when performing work for the Town. Every attempt should be made to avoid damage to private property, and if damage does occur, the Contractor is responsible to make repairs to the home owner’s satisfaction. It is important that Contractor respond quickly to any damage that may be a safety hazard. Contractor may also be held responsible for any costs incurred by the Town if the Town is required to correct damages in the absence of response from the Contractor.

SECTION 8.1.7 CONTRACT TERM

Notwithstanding anything previously contained in this Contract, the terms of this contract may only be terminated by submitting a written Notice of Contract Termination to the "Town" or the "Contractor" at least Fourteen-(14) days prior to the effective date of termination.

The contract term shall be for the period of construction; 240 calendar days from the date of the notice to proceed. Any modifications to the contract term shall be based upon the approved contract period bid. The Contractor hereby agrees to commence work under this contract within 15 days of the receipt of the Notice to Proceed and to fully complete the project within 240 calendar days. Liquidated damages are assessed at $500 per day for each calendar day that any work shall remain incomplete beyond the time specified.

SECTION 8.1.8 GUARANTEE

Contractor agrees to guarantee all of the work performed under this contract to be done in accordance with the Contract Documents in a workmanlike manner and to replace any work which may be deemed unacceptable by the Town up to ONE (1) Calendar year from the completion and acceptance of the work due to defective materials or workmanship.
SECTION 8.1.9 BOUNDING EFFECT OF AGREEMENT AND EXECUTION

All of the terms and conditions of this Contract shall be binding on the Contractor and the Town, and their respective heirs, legal and personal representatives, successors and assigns. Unless otherwise specified all formal bids submitted shall be binding for Ninety (90) calendar days following bid opening date, unless the bidder, upon request of the Town, agrees to an extension.

In consideration of the payments and agreements mentioned, to be made and performed by the owner, the Contractor hereby agrees with the Owner to commence and complete the construction described as follows: COLLECTIONS SYSTEM REHABILITATION PROJECT 1 hereinafter called the PROJECT and all work in connection therewith, under the terms as stated in the Contract Documents, for the total sum amount of:

_______________________________________________________________________

The Contractor further agrees to complete all work and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance and other accessories and services necessary to complete the said project in accordance with the conditions, stated in the Contract Documents as prepared by the Town of Boonsboro, all of which are made a part hereof and collectively constitute the Contract Agreement.

In witness whereof, each party to this Contract has caused it to be executed on the date indicated below.

DATE: ________________ By: ___________________________________
        Town Manager

DATE: ________________ By: ______________________________________
        Contractor

____________________________
Witness