



Imagine that!

TOWN OF STRATFORD

**234 Shakespeare Drive
Stratford, PE C1B 2V8
Phone: (902) 569-1995
Fax: (902) 569-5000**

Sanitary Sewer Pipe Lining

1. Scope of Services

The Stratford Utility Corporation is seeking quotations from qualified contractors to complete a cured-in-place-pipe lining project of approximately 200 meters of sanitary sewer main. The project will consist of a 105m section of 200mm concrete sewer pipe on Southport Drive, a 77m section of 200mm concrete sewer pipe adjacent to Sunnyside Drive, and an 18m section of 300mm concrete sewer pipe on Bayside Drive as shown on the attached sketches.

Quotations will be received **up to 2:00 pm on Thursday, November 16, 2023** at:

Town of Stratford
234 Shakespeare Drive
Stratford, PE C1B 2V8

Attention: Carter Livingstone, P.Eng

Or via email to clivingstone@townofstratford.ca

The tenders will be opened publicly immediately following the closing of bids.

It is the responsibility of the bidder to ensure any addendum issued is received. Addenda will be posted on the Town's website at www.townofstratford.ca

2. Specifications

2.1 Scope of Work

The scope of work includes the provision of materials, labour, equipment, and all necessary incidentals and appurtenances for the sewer flushing, cutting laterals and grinding, root cutting, by-pass pumping, CCTV video inspection and report pre and post lining, reinstatement of service connections, traffic control and all necessary incidentals and appurtenances.

It is the intent of this specification to provide for the reconstruction of pipelines by the installation of a resin-impregnated flexible tube, which is tightly formed to the original conduit. The resin will be cured using hot water, steam, or ultraviolet curing within the tube. The Cured-In-Place Pipe (CIPP) will be continuous and tight-fitting. The finished pipe shall be such that when the thermosetting resin cures, the total wall thickness shall be a homogeneous and monolithic felt and resin composite matrix, chemically resistant to withstand internal exposure to domestic sewage.

The Contractor shall measure the length of the sewer sections to be lined along with the internal diameter from both the upstream and downstream manholes.

2.2 Submittals

The successful Contractor shall submit copies of the following:

- .1 Manufacturer's material specifications and installation procedure
- .2 CIPP Liner Design calculation for Standard Loading Condition Design
- .3 Curing process data and measurements
- .4 Samples of cured liners
- .5 Independent test reports on samples of cured liners

2.3 Health and Safety Requirements

The Contractor must develop a written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce the plan until final demobilization from site. The Health and Safety Plan must address project specifications.

The Contractor will be responsible for the health and safety of persons on-site, the safety of the property on-site and for protection of persons adjacent to site and environment to the extent that they may be affected by the conduct of Work.

The Contractor must comply with and enforce compliance by employees with safety requirements of applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with the site-specific Health and Safety Plan.

The Contractor shall provide or arrange for suitable and appropriate protection for all materials stored at or near the job site.

The Contractor shall provide all water, power and light service required for the Work. The Contractor shall make all necessary applications, obtain required permits and pay all fees and charges for such service and its use.

The Contractor shall take all necessary measures and reasonable precautions in order to reduce noise, dust and smoke to a minimum. They shall comply with any municipal by-laws or ordinances in the Town of Stratford.

The Contractor shall inform the Utility of normal working hours and shall give reasonable notice (48 hours minimum) of any alterations to these working hours. Regular working hours are from 7:00 am to 9:00 pm. If work is required before or after the regular hours, approval from the Stratford Utility is required before the work can proceed.

2.4 Qualifications

Since sewer products are intended to have a 50-year design life, and in order to minimize the Utility's risk, only proven products with substantial successful installations and experience will be approved.

In order for the CIPP product and Installation Contractor to be deemed commercially acceptable and approved for this project, they must meet the following criteria:

- .1 CIPP Product
 - .1 The CIPP product must have been installed in a minimum of five successful wastewater collection system projects of a similar size and scope of work and documented to the satisfaction of the Utility to assure commercial viability.
 - .2 The CIPP product shall comply with ASTM F1216-09 (except for the engineering calculations, use ASTM F1216-07a) and/or the latest revision of ASTM F1743 and /or ASTM F2019-11, including appendices.
 - .3 For the CIPP to be considered Commercially Proven, it shall have been successfully in service in an application similar to this project for a minimum of 10 years and documented to the satisfaction of the Utility.
 - .4 Third-party test results supporting the structural properties and long-term performance of the CIPP product shall be submitted for approval, and such data shall be satisfactory to the Utility. No CIPP product will be approved without independent third-party testing verification.
- .2 Installation Contractor
 - .1 The Installation Contractor shall be certified by the CIPP product manufacturer to have had at least 5 years of active experience in the installation of the proposed CIPP product.

.2 The Installation Contractor superintendent(s) designated for the project shall have at least 5 years of installation experience of the same CIPP product being represented by the bidder. This shall be documented to the Utility's satisfaction in the form of a resume of work experience showing five (5) job references detailing scope of work (linear footage and pipe diameters), location of work, and reference contact information for each project listed.

2.5 Products - Structural Requirements

Each CIPP shall be designed to withstand internal and/or external loads as dictated by the site and pipe conditions. The design thickness of the CIPP shall be derived using standard engineering methodology as found in ASTM F1216-07a, Appendix X1.

The layers of the finished CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or such that the knife blade moves freely between the layers. If separation of the layers occurs during testing of the field samples, new samples will be cut from the work. Any reoccurrence may be cause for rejection of the work.

Long-term testing in general accordance with ASTM D2990 must have been performed for flexural creep of the CIPP pipe material to be installed. Such testing results are to be used to determine the long-term, time-dependent flexural modulus to be utilized in the product design. This is a performance test of the materials (CIPP Tube and Resin) and general workmanship of the installation and curing as defined within the relevant ASTM standard. A percentage of the instantaneous flexural modulus value (as measured by ASTM D790 testing) will be used in design calculations for external buckling. The percentage, or the long-term creep retention value utilized, will be verified by this testing. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus used in the CIPP design.

The CIPP shall meet the following minimum strength requirements:

MINIMUM CIPP PHYSICAL PROPERTIES			
		Cured Polyester Composite	
Property	Test Method	min. per ASTM F1216- 07a	Enhanced Resin
Modulus of Elasticity	ASTM D790	250,000 psi	400,000 psi
Flexural Stress	ASTM D790	4,500 psi	4,500 psi
Flexural Modulus (50- year)	ASTM D790	125,000 psi	200,000 psi

The required CIPP wall thickness shall be based as a minimum on the physical properties as noted above, and in accordance with the design equations in the Appendix XI of ASTM F1216-07a, and the following design parameters:

Design Life	= 50 years
Design Safety	= 2.0
Retention Factor for Long-Term Flexural Modulus to be used in Design	= 50% max
Ovality * (calculated from (X1.1 of ASTM F1216-07a)	= 3%
Enhancement Factor, K	= 7.0
Soil Modulus (only required for fully deteriorated design conditions)	= 6.89 MPa
Soil Density	= 1920 kg/m ³
Live Load	= AASHTO HS-20
Design Condition	= Fully Deteriorated
Flexural Strength (Determined by ASTM D790)	= Minimum 31 Mpa
Flexural Modulus (Determined by ASTM D790)	= Minimum 1724 Mpa

Note: A revised design submission will be required when one or more of the standard loading conditions for a specific sewer section are exceeded, such as a pipe with more than 3.0m of cover and/or a pipe with an ovality greater than 3%.

2.6 Products - CIPP Tube

The CIPP tube shall consist of one or more layers of a flexible needled felt or an equivalent nonwoven or woven material, or a combination of nonwoven and woven materials, capable of carrying resin, withstanding installation pressures and curing temperatures. The CIPP tube should be compatible with the resin system to be used on this project. The material should be able to stretch to fit irregular pipe sections and negotiate bends.

The CIPP tube should be fabricated under controlled conditions to a size that, when installed, will tightly fit the internal circumferences and the length of the original conduit. Allowances should be made for the longitudinal and circumferential stretching that occurs during placement of the tube. Maximum stretching allowances shall be as defined in ASTM F1216-07a and ASTM F1216-09, ASTM F1743 or ASTM F2019-11. The Installation Contractor shall verify the lengths in the field before cutting the liner to length. Continuous individual liners can be made over one or more manhole to manhole sections.

The CIPP tube shall be uniform in thickness and, when subjected to the installation pressures, shall meet or exceed the designed wall thickness.

Any plastic film applied to the tube on what will become the interior wall of the finished CIPP shall be compatible with the resin system used, translucent enough that the resin is clearly visible, and shall be firmly bonded to the felt material.

At time of manufacture, each lot of CIPP tube shall be inspected and certified to be free of defects. The tube shall be marked for distance at regular intervals along its entire length, not to exceed five feet. Such markings shall also include the CIPP tube Manufacturer's name or identifying symbol.

The CIPP tube may be made of single or multiple-layer construction where any layer must not be less than 1.5 mm thick. A suitable mechanical strengthener membrane or strip may be placed in between layers were required to control longitudinal stretching.

2.7 Products – Resin Components

The resin system shall be a corrosion-resistant polyester or vinyl ester, along with a compatible catalyst system. The resin used shall not contain non-strength enhancing fillers.

When combined with the CIPP tube, the resin system shall provide a CIPP that meets the structural requirements of ASTM F1216-07a, ASTM F1743 or ASTM F2019-11, the minimum physical properties specified herein, and those properties which are to be utilized in the design of the lining system for this project.

When combined with the CIPP tube, the resin system shall provide a CIPP that complies with the chemical resistance requirements specified in ASTM F1216, ASTM F1743 or ASTM F2019-11.

3. Execution

3.1 General

The Contractor shall deliver the resin-impregnated CIPP tube to the site and provide all equipment required to insert and cure the CIPP within the host pipe. The Contractor shall designate a location where the tube will be vacuum impregnated with the resin prior to installation. The Contractor shall notify the Utility at least 48 hours prior to wet out to allow the Utility's representative to observe the materials and wet out procedure. All procedures to prepare the CIPP for installation shall be in strict accordance with the Manufacturer's recommendations.

The CIPP shall be vacuum impregnated with resin not more than 120 hours before the time of installation and stored out of direct sunlight at a temperature of less than 70°F.

The Utility will locate and designate all manhole access points and make them accessible for the work and provide rights-of-access to these locations. The Utility will also provide free access to water hydrants for cleaning, installation and other process-related work

items requiring water. The Contractor may not access any fire hydrants without the proper authorization by Utility staff. When water from fire hydrants is used, care shall be taken to ensure water is conserved and not wasted.

The Contractor shall provide traffic control services by trained personnel throughout the duration of the work.

The Contractor shall provide adequate sewer ventilation and odor mitigation during the sewer lining process when significant odors are experienced.

3.2 Equipment

The Contractor shall ensure that all required equipment is on-site and in satisfactory working order prior to commencing the installation of a liner section.

3.3 Confined Spaces

The Contractor must be equipped with, or must retain confined space entry equipment and personnel for access to maintenance holes as follows:

- tripod, winch and fall arrest system
- continuous gas and oxygen detectors
- voice-activated two-way communication equipment
- confined space ventilation equipment
- rescue breathing equipment (positive pressure)
- all confined space entry personnel shall be trained in confined space entry and WHMIS
- all confined space entry personnel shall have received inoculations (Hepatitis A and B, and tetanus)

3.4 Notification and Preparation

The Contractor shall be responsible for advising the public (residents) of any interruption (commencement and duration) to the use of the service connection or any change thereafter, 48 hours in advance of the interruption or any service disruption affecting their service connections.

The Installation Contractor shall make every effort to maintain service usage throughout the duration of the project. The longest period of no service shall be 8 hours. The Contractor shall provide a service disruption notice to all affected residents indicating both daytime and after-hours local contact telephone numbers. The notice shall indicate to the residents what to expect as part of this work and typical procedures to alleviate odor resulting from sewer lining and curing process.

The Contractor shall perform cleaning, video, and inspection prior to installation of the CIPP. The Contractor, when required, shall remove all debris from within the pipe that will

interfere with the installation of the CIPP. The Contractor shall be responsible for disposal of such debris removed during the cleaning operations.

All sludge, dirt, sand, rocks, grease and other solid or semi-solid material resulting from the cleaning operations shall be removed at the downstream maintenance hole of the section being cleaned.

It shall be the responsibility of the Contractor to notify the Utility of line obstructions, offset joints or collapsed pipe that will prevent the insertion of the tube or significantly reduce the capacity of the sewer. The Utility, with input from the Contractor, shall determine the method of pipe repair required and shall address these concerns on a case-by-case basis.

The sewer section shall be reamed to remove deposits and protrusions (that cannot be removed with the sewer flushing operation) using an approved cutting / reaming method. Deposits and protrusions may include, but are not limited to, protruding service connections, calcite build-up and roots.

Protruding laterals or services shall be trimmed flush with the inside of the main sewer wall prior to installation of the CIPP. Trimming shall not cause damage to the lateral or service beyond the inside face of the main sewer.

An acceptable CCTV camera must monitor any trimming/reaming operations.

3.5 Bypass Pumping

When interruption of sewer line flows is necessary to properly conduct the inspection and rehabilitation operations, acceptable methods of flow control and bypass pumping shall be used. During the inspection and rehabilitation, sewer flows shall be shut off in order to enable proper inspection of the pipe. After the work is completed, flows shall be restored to normal. Excess sewage flows shall be transported through a closed, leak-tight pipeline or by tank trucks to the nearest or most economical disposal area.

The Contractor, when required, shall provide for the flow of sewage around the section of pipe designated for repair. When possible, the bypass shall be made by plugging the line at an existing upstream manhole and pumping the flow into a downstream manhole or adjacent system. The pump and bypass lines shall be of adequate capacity and size to handle the flow. The Installation Contractor shall furnish all necessary pumping equipment, conduit, etc. to adequately, safely and environmentally divert sewage flow around the work.

The Contractor shall provide at least one operational backup pump for each main pump in service. Each backup pump shall be capable of moving the same flow rate as the main pump.

The Installation Contractor shall submit a general bypass plan.

3.6 Television Inspection

A CCTV video inspection and report shall be carried out prior to any work on the sewer. An additional CCTV video inspection and report shall be required after cleaning operation and/or lateral cutting / reaming should these be required prior to the installation of the CIPP. Another inspection shall be carried out after the installation of the liner and the reinstatement of connections.

The Contractor shall provide video equipment capable of properly documenting the conditions as found within the pipe. Lighting for the video camera shall illuminate the entire periphery of the sewer. The camera shall be radial view type capable of viewing 360° within the pipe and shall provide an unobstructed view of the full pipe.

The video shall begin with a clear identification of the pipeline location, upstream and downstream manhole designation, and pipe diameter. The video shall provide an accurate length measurement of the entire segment and of the distance to each lateral connection. The Contractor shall pan all lateral connections on both the pre and post-videos.

Reverse video set-ups shall be utilized when line obstructions prevent full segment televising from the initial set-up direction.

All videos shall be provided to the Utility in a portable thumb drive format.

3.7 Installation

The CIPP shall be installed in accordance with the practices given in ASTM F1216-07a and ASTM F1216-09 (for direct inversion installations), or ASTM F1743 and ASTM F2019-11 (for pulled-in-place installations). The quantity of resin used for the tube's impregnation shall be sufficient to fill the volume of air voids in the CIPP tube with additional allowances being made for polymerization shrinkage and the loss of any resin through cracks and irregularities in the original pipe wall. A vacuum impregnation process shall be used in conjunction with a roller system to achieve a uniform distribution of the resin throughout the CIPP tube.

The resin-impregnated CIPP tube shall be installed into the host pipe by methods specified in ASTM F1216-07a and ASTM F1216-09, ASTM F1743 or ASTM F2019-11 and proven through previous successful installations. The insertion method shall not cause abrasion or scuffing of the CIPP tube. Hydrostatic or air pressure shall be used to inflate the CIPP tube and mold it against the walls of the host pipe. The tube should be pulled-in or inverted through an existing manhole or approved access point and fully extend to the next designated manhole or termination point. There will be no use of sewage in place of clean water for insertion of the tube, or for the curing of the liner.

Temperature gauges shall be placed between the CIPP tube and the host pipe's invert position to monitor the temperatures during the cure cycle.

3.8 Cool Down

Cool down may be accomplished by the introduction of cool water or air to replace water or pressurized air being relieved. Care shall be taken in the release of the hydrostatic head so that a vacuum will not be developed.

3.9 Finish

The finished CIPP shall be continuous over the entire length of an insertion run and be as free as commercially practical from visual defects such as foreign inclusions, dry spots, pinholes, and delamination. The CIPP shall be homogeneous and free of any leakage from the surrounding ground to the inside of the CIPP.

During the warranty period, any defects which will affect the integrity or strength of the CIPP, collect solids, or reduce hydraulic flow capabilities of the product shall be repaired at the Contractor's expense in a manner mutually agreed upon by the Utility and the Contractor.

3.10 Reinstate Services

Accurate location of the service connections shall be made by inspection of the pre-installation videotape or sewer walk. The Contractor shall be responsible for confirming the locations of all service connections prior to installing the CIPP.

After the CIPP has been installed, all existing active services shall be reinstated unless otherwise indicated by the Utility. The reinstatement of services shall be done without excavation. Reinstatement of services will be accomplished from the interior of the CIPP by means of a video camera-directed cutting device. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs and liability associated with such excavation and restoration work.

If it is necessary to excavate for the repair of the defective or damaged liner, or due to the malfunction of the contractor's machinery/equipment, or due to the retrieval of equipment that was lodged due to the contractor's mishandling of the equipment, the Contractor shall undertake such excavation, and complete all repair work, backfill and restore at their own expense. All such work shall be performed by an approved Sub-Contractor and shall be completed in accordance with current Utility's Specifications.

All cut service connections shall be free of burrs, frayed edges, or any restriction preventing free flow of wastewater. Laterals shall be reinstated to a minimum of 90% of their original diameter and no more than 100% of their minimum diameter. The CIPP shall be tightly sealed at the cut openings with no gaps.

Following any installation that covers a live service lateral connection, the Contractor must open each service connection to a minimum of seventy five percent (75%) within eighteen

(18) hours. All live service lateral connections must be entirely opened by no later than the day following the liner installation.

The interface between the new liner / repair and the existing service lateral shall be leak tight under external hydrostatic pressure.

If lengthy delays are encountered, it will be the Contractor's responsibility to provide alternate sanitary facility to the resident(s) at the Contractor's cost.

3.11 Quality Assurance Procedures

Two (2) flat plate samples shall be processed and tested, one from each segment of pipe. For pipe diameters, less than 18 inches, restrained end samples may also be utilized. The CIPP physical properties shall be tested in accordance with ASTM F1216, Section 8, using either allowed samples method. The flexural properties must meet or exceed the values listed herein and the values submitted to the Utility by the Contractor for this project's CIPP wall design, whichever is greater.

Testing shall be completed by an accredited, independent laboratory. Testing results shall be provided to the Utility within seven (7) days of receipt. The testing agency shall be subject to the approval of the Utility. The Contractor shall authorize the testing agency to forward the test reports to the Utility and communicate with the Utility concerning the testing and results. The Contractor shall arrange for sample delivery to the testing agency.

Wall thickness of samples shall be determined in a manner consistent with paragraph 8.1.2 of ASTM D5813. The minimum wall thickness at any point should be greater than the required thickness from the applicable liner design or Contract minimum thickness, whichever is greater.

Flexural testing of the collected samples shall be conducted in accordance with ASTM D790, latest version, with only the structural portion of the CIPP being tested.

CIPP installation shall be inspected by post-lining video inspection. Variations from true line and grade may be inherent because of the conditions of the original piping. No infiltration of groundwater should be observed. All service entrances should be unobstructed and accounted for.

Where the test results do not meet or exceed the requirements, the liner shall be deemed deficient subject to reconciliation of the test results.

A liner deemed deficient based on sample test results shall be reconciled for true deficiency by repeating the design for the liner using the test results for flexural modulus and flexural strength while keeping all other design parameters the same. Where the repeated design (the reconciliation) shows that the combination of test results (flexural modulus, flexural strength and thickness) provides a liner that meets the design requirements, the liner shall not be deemed deficient.

Such design reconciliation shall not be permitted when test results do not meet the minimum requirement for flexural modulus and flexural strength in the ASTM F1216 in which case the liner will be deficient. A deficient liner implies that an additional two-year warranty shall be applied.

3.12 Clean-up

Upon acceptance of the installation work and testing, the Contractor shall restore the project area affected by the operations to a condition at least equal to that existing prior to the work.

4. Qualifications

Bidders must complete and submit with their quotation the form included which will identify similar projects completed, equipment to be used, and qualifications of the superintendent.

5. Right of Rejection and Clarification

The Stratford Utility reserves the right to reject any and all quotations and to request clarification of information from any Contractor. The Utility is not obligated to enter into a contract on the basis of any quotation submitted in response to this document. The Stratford Utility advises that due to budgetary restraints the scope of the project may have to be diminished in total cost in order to meet available funding. Quotations shall remain open to acceptance and are irrevocable for a period of sixty (60) days after tender closing date.

6. Insurance Requirements

The Contractor shall secure and maintain a minimum of \$2,000,000 Commercial General Liability Insurance and a minimum \$2,000,000 Automobile Liability Insurance on all vehicles owned, leased, operated or licensed in the name of the Contractor, and add as an additional insured the Town of Stratford. The Contractor shall provide to the Town of Stratford 30 days' notice of any material change or policy cancellation. The Contractor shall provide the Town of Stratford with a Certificate of Insurance complying with these requirements upon notification of award and prior to commencement of construction.

7. Amendments

Amendments to the submitted offer will be permitted if received prior to tender closing and if endorsed by the same party or parties who signed and sealed the offer. Amendments will be received by email to clivingstone@townofstratford.ca or fax to (902) 569-5000.

8. Additional Information

8.1 Existing CCTV Video

The Stratford Utility Corporation has CCTV for the sections of pipe requiring CIPP lining, however the video was completed in 2017. The video can be provided upon request to clivingstone@townofstratford.ca. The Stratford Utility Corporation holds no responsibility for the current condition of the pipe varying from that recorded in these videos.

Questions or requests for further information shall be addressed to:

Carter Livingstone, Project Manager

Phone (902) 367-4448

Fax (902) 569-5000

email: clivingstone@townofstratford.ca

BID FORM

I have read and understand the requirements of this request for quotation (RFQ) and agree to provide the required services as described herein and necessary to complete the project satisfactorily. The quotation fee shall include all labor, material, and equipment necessary to provide the services as outlined, including all expenses incurred. The fixed lump sum fee for providing the required service as described herein, mainly approximately 200 meters of CIPP lining, is:

CIPP Supply and Install
Including all incidentals \$ _____

HST (15%) \$ _____

TOTAL \$ _____

Start Date: _____

Completion Date: _____

SUBMITTED BY

CONTRACTOR: _____

BY: _____

SIGNATURE

NAME (PRINT): _____

ADDRESS: _____ Postal Code: _____

TELEPHONE: (____) _____

This Form must be completed and submitted with the Bid.

Please provide a list of a similar projects completed by the bidder (minimum four (4) projects required).

Project/Client	Year Completed	Value

Please provide a list of equipment which the bidder agrees to provide as required to complete the work in an efficient manner within the time allowed.

Make and Description	Capacity	Year	Condition

Please provide the name and qualifications of the Superintendent who will be on the project.

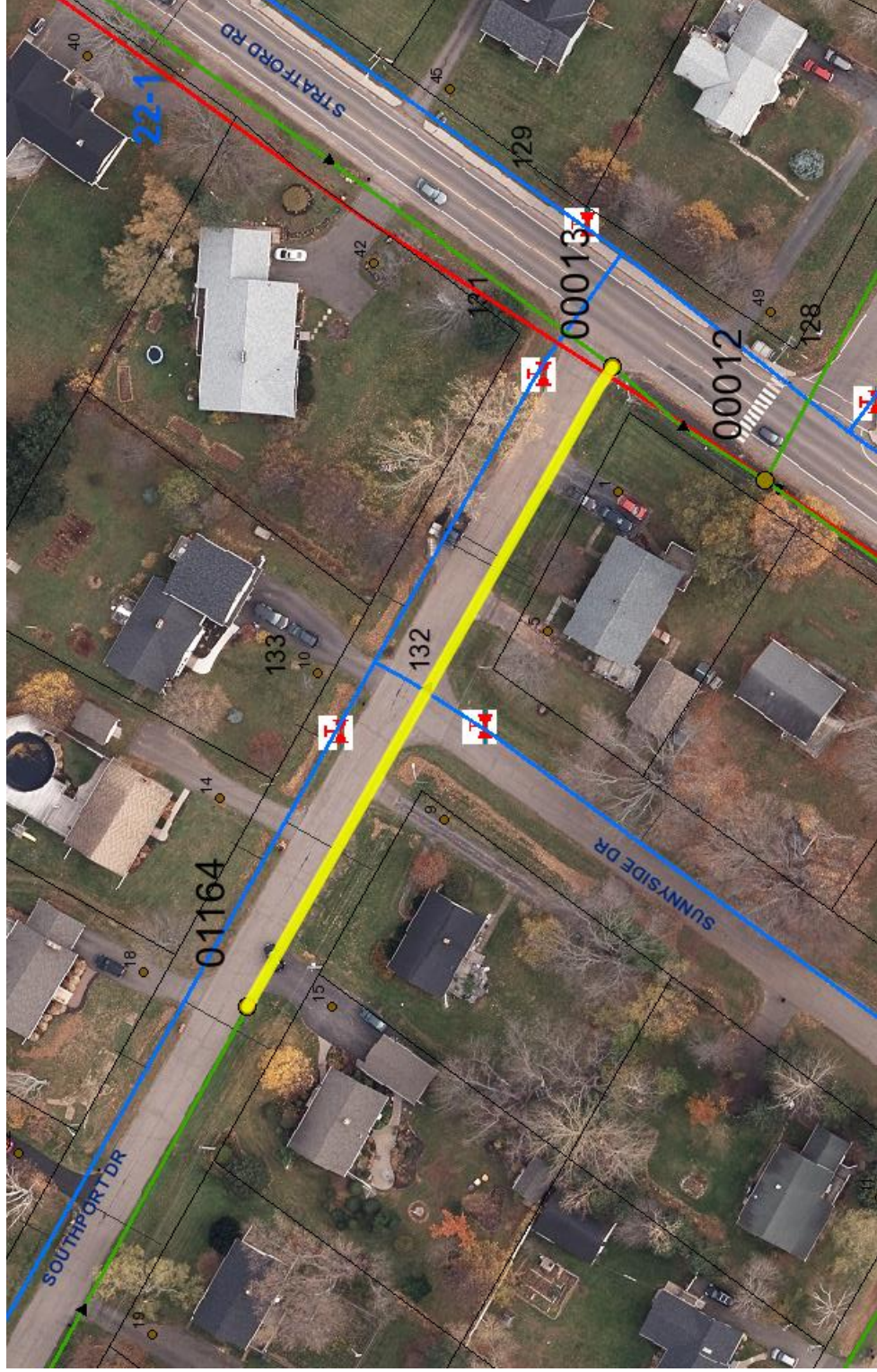
Name	Qualifications and Experience

Southport Drive

Approximately 105 meters of 200mm diameter concrete pipe (MH01164 – MH00013)

5 service connections

Some root intrusion, some fine deposits

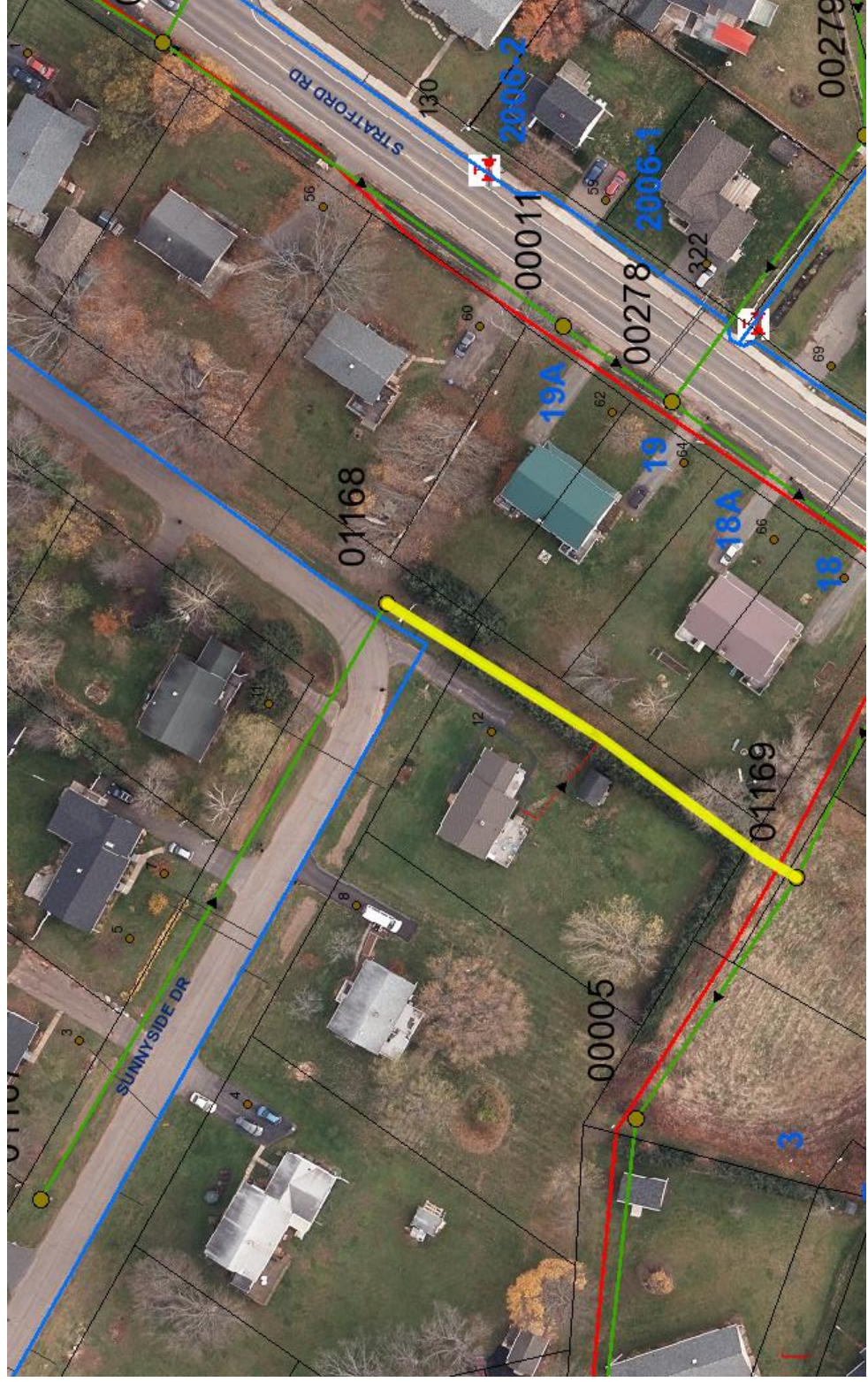


Sunnyside Drive

Approximately 77 meters of 200mm diameter concrete pipe (MH01168 – MH01169)

2 service connections

Some root intrusion, some fine grease deposits



Bayside Drive

Approximately 18 meters of 300mm diameter concrete pipe (MH00625 – MH00133)

0 service connections

