VILLAGE OF RIVER FOREST
DEPARTMENT OF PUBLIC WORKS

ADDENDUM # 1

FOR

2018 SEWER LINING IMPROVEMENTS

Due Date: Friday, April 27, 2018

The "Acknowledgement of Receipt" sheet of this addendum **MUST** be included in the proposal package. Proposal packages not including signed Acknowledgement of Receipt Sheet may be rejected.

QUESTIONS/ANSWERS:

1. Page 37 of 55 shows the design parameters, however, most of these values are blank. Can you please provide a value for the following parameters? Ovality, Ground Water, Soil Modulus and Soil Density.
   a. **The pages from the Call for Bids document containing Special Provision #13 have been attached to this addendum. Values have been added for each of these parameters.**

2. Can you provide a pipe schedule showing each MH to MH section including length, diameter and starting and ending manholes?
   a. **Though these values are all shown on the Location Maps which have been provided, a pipe schedule has been attached to this addendum.**

3. Can you provide a manhole rehabilitation schedule showing the manholes and depths which make up the 40 VF to be rehabilitated?
   a. **The specific manholes have not yet been identified. These locations will be established upon receipt of the bids, however, their dimensions will be within the parameters established in the bid item.**

4. Location Maps 3 & 4 have been revised to more accurately reflect the depth of pipe. The revised maps have been attached to this addendum.

End of Addendum No. 1

VILLAGE OF RIVER FOREST
DEPARTMENT OF PUBLIC WORKS

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDUM

PROPOSAL/BID: 2018 SEWER LINING IMPROVEMENTS

ADDENDUM #: 1

PROPOSER/BIDDER: _____

ADDRESS: _____

RECEIVED BY: _____
(NAME)

_____
(SIGNATURE)

DATE: _____

- Pavement replacement shall consist of a 8" Portland Cement Concrete Base patch (6-bag mix) to be left 2" below finish grade. The surface patch shall consist of a temporary asphalt patch (temporary asphalt patch to be replaced with a hot-mix asphalt patch to be completed **by others**).

The Village of River Forest reserves the right to add or remove any combination of point repairs identified.

Basis of Payment: This work shall be paid for at the contract unit price per **LUMP SUM** (based on each specific location) for

POINT REPAIR (#),

which price shall include all costs associated with the labor and materials necessary to complete the work herein described in accordance with the Specifications.

SP-13 CURED-IN-PLACE PIPE (SIZE)

This item shall consist of lining existing combined sewers with a CIPP. This specification references American Society for Testing and Materials (ASTM), National Association of Sewer Service Companies (NASSCO), and American Water Works Association (AWWA) standards which are made part hereof by such reference and shall be the latest edition and revision thereof. Should there be any conflicts between these standards and this specification, this specification shall govern. The village reserves the right to waive sections or vary from this specification where it is determined to be in the best interest of the Village. No variations will be allowed without written approval from the Engineer.

Materials:

TUBE

The tube shall consist of one or more layers of absorbent non-woven felt fabric, meeting the minimum mechanical properties defined in ASTM F1216 (Section 5.1), ASTM F1743 (Section 5.2.1) or ASTM D5813 (Sections 5 and 6). The tube shall be constructed to withstand installation pressures, have sufficient strength to bridge missing pipe, and stretch to fit irregular pipe sections and bends. It shall be manufactured to a size that when installed will tightly fit the internal circumference and length of the original pipe. Allowance should be made for circumferential stretching during installation.

The tube shall have a relatively uniform thickness that when compressed at installation pressures will equal or exceed the calculated minimum design CIPP wall thickness.

The outside layer of the tube shall be coated with an impermeable, flexible membrane that will contain the resin and allow the resin impregnation procedure to be monitored.

The tube shall contain no intermediate or encapsulated elastomeric layers. No material shall be included in the tube that may cause delamination in the cured CIPP. No dry or unsaturated layers shall be evident.

The wall color of the interior pipe surface of CIPP after installation shall be a relatively light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.

Seams present in the tube shall be stronger than the non-seamed felt material.

The tube shall be marked for distance at regular intervals along its entire length, not to exceed 5 ft. Such markings shall include the manufacturers name or identifying symbol.

RESIN

The resin system shall be a corrosion resistant polyester or vinyl ester system, including all required catalysts and initiators, that when cured within the tube create a composite that satisfies the requirements of ASTM F1216, ASTM F1743 and ASTM D5813, the physical properties herein, and those which are to be utilized in the submitted and approved design of the CIPP for this project. The resin shall produce a CIPP that will comply with the structural and chemical resistance requirements of this specification.

Structural Requirements:

No liner shall be installed until liner thickness calculations have been submitted and approved by the Engineer. The CIPP shall be designed per ASTM F1216, Appendix X.1. The design shall assume no structural support from the existing pipe.

The Contractor must have performed long-term testing for flexural creep of the CIPP pipe material installed by his Company. 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 (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. Retention values exceeding 50% of the short-term test results shall not be applied unless substantiated by qualified third party test data to the Village's satisfaction. The materials utilized for this 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 Enhancement Factor 'K' to be used in 'Partially Deteriorated' Design conditions shall be assigned a value of 7.

The layers of the cured 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 the probe or knife blade moves freely between the layers. If the layers separate during field sample testing, new samples will be required to be obtained from the installed pipe. Any reoccurrence may cause rejection of the work.

The cured pipe material (CIPP) shall conform to the structural properties, as listed below:

MINIMUM CIPP PHYSICAL PROPERTIES

Cured Polyester Composite Property	Test Method	min. per ASTM F1216	Enhanced Resin
Modulus of Elasticity	ASTM D790	250,000 psi	400,000 psi
Flexural Stress	ASTM D790	4,500 psi	4,500 psi

The required structural CIPP wall thickness shall be based (as a minimum) on the physical properties in

the table above, or greater values if substantiated by independent lab testing and in accordance with the design equations in the Appendix X.1 of ASTM F1216, and the following design parameters:

Design Safety Factor	= 2.0
Retention Factor for Long-Term Flexural Modulus to be used in Design *(As determined by long-term tests described in section 5.2 and approved by the Owner)*	= 50%-70%
Ovality* *(calculated from ASTM F1216, X1.1)*	= 2%
Enhancement Factor, K	= 7.0
Groundwater Depth (*above invert of existing pipe*)*	= 0.0
Soil Depth *(above crown of existing pipe)**	= (variable)
Soil Modulus**	= 1000 psi. (assumed)
Soil Density**	= 120 lb/ft^3 (assumed)
Live Load**	= H20 Highway
Design Condition *(assume fully deteriorated)* ***	= ***

*Denotes information, which can be provided here or in inspection videotapes or project construction plans. Multiple line segments may require a table of values.
**Denotes information required only for fully deteriorated design conditions.
***Based on review of video logs, conditions of pipeline can be fully or partially deteriorated. (See ASTM F1216 Appendix) Design shall assume full deterioration for all pipes, regardless of condition.

Any layers that are not saturated with resin prior to insertion into the existing pipe shall not be included in the structural CIPP wall thickness computation.

Testing Requirements:

Chemical Resistance –
The CIPP shall meet the chemical resistance requirements of ASTM F1216, Appendix X2. CIPP samples for testing shall be of tube and resin system similar to that proposed for actual construction. It is required that CIPP samples with and without plastic coating meet these chemical-testing requirements.

Hydraulic Capacity –
Overall, the hydraulic cross-section shall be maintained as large as possible. The CIPP shall have a minimum of the full flow capacity of the original pipe before rehabilitation. Calculated capacities may be derived using a commonly accepted roughness coefficient for the existing pipe material taking into consideration its age and condition.

CIPP Field Samples –
The Contractor shall submit test results from field installations of the same resin system and tube materials as proposed for the actual installation. These test results must verify that the CIPP physical properties previously specified have been achieved in previous field applications.

Additional Requirements:

Submittals –
Prior to the use of any materials, the Contractor shall furnish written certification of compliance with the applicable ASTM and manufacturer's standards for all materials including the tube, resin, and catalyst system.

Cleaning of Sewer Lines –
The Contractor shall remove all internal debris out of the sewer line that will interfere with the installation of CIPP. This work shall be completed through the use of hydraulically powered equipment. The Contractor shall be responsible for removal of all/any debris collected from the site. No additional compensation will be provided for regular cleaning as it shall be considered incidental to CIPP installation.

It shall be the responsibility of the Contractor to clear the line of any obstructions such as solids and roots that will prevent the installation of CIPP. If pre-installation inspection reveals an obstruction such as a protruding service connection, dropped joint, or a collapse that will prevent the installation process (one which was not evident on the pre-bid video provided by the Village) and it cannot be removed by conventional sewer cleaning equipment, then the Contractor shall provide to the Village a proposed cost estimate to make a point repair excavation to uncover and remove or repair the obstruction. Such proposal shall be approved in writing by the Engineer prior to the commencement of the work and shall be considered as a separate pay item. No work, in addition to that which is identified in these Contract Documents, will be approved unless submitted to the Engineer and approved in writing.

Bypass Sewage –
The Contractor shall provide for the flow of sewage around the section(s) of pipe designated for repair. The bypass shall consist of plugging the line at an upstream manhole and pumping the flow to a downstream manhole or adjacent system. The pump(s) and bypass line(s) shall be of adequate capacity to accommodate the sewage flow. The Village may request a detail of the bypass plan to be submitted prior to any work beginning.

Inspection of Pipelines –
Inspection of pipelines shall be performed by experienced personnel trained in locating breaks, obstacles and service connections using close circuit television (CCTV) inspection techniques. The pipeline interior shall be carefully inspected to determine the location of any conditions that may prevent proper installation of CIPP. These shall be noted and corrected. A videotape and suitable written log for each line section shall be produced for later reference by the Village.

Public Notification –
The Contractor shall make every effort to maintain sewer service usage throughout the duration of the project. In the even that a connection will be out of service, the longest period of no-service shall be eight (8) hours. The Contractor shall deliver door notices no less than 24 hours and no more than 48 hours prior to service interruption. Said notices shall inform the resident of the work to be conducted and identify the time during which service will be interrupted, while recommending that water usage be minimized during this time. The notice shall include a phone number for residents to contact the Contractor to discuss any questions or concerns that they have.

Installation:
CIPP installation shall be in accordance with ASTM F1216, Section 7, or ASTM F1743, Section 6, with the following modifications:

- Resin Impregnation – The quantity of resin used for tube impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances for polymerization shrinkage and the potential loss or resin during installation through cracks and irregularities in the original pipe wall, as applicable.
- Tube Insertion – The tube shall be inserted through an existing manhole or approved access point and fully extended to the next designated manhole or termination point. The tube shall be positioned in

the pipeline using the inversion method. Pressure shall be limited so as not to stretch the tube longitudinally by more than 5% of the original length and shall be maintained between the manufacturer's minimum and maximum allowable so as not to damage the tube.

- All manhole connections (upstream and downstream ends) shall be water-tight
- Temperature gauges shall be placed between the tube and the host pipe's invert position to monitor the temperatures during the cure cycle.
- Curing shall be accomplished by utilizing hot water under hydrostatic pressure or steam pressure in accordance with the resin manufacturer's recommended cure schedule. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing heat source. An additional gauge shall be placed between the impregnated tube and the pipe invert at the termination to determine the temperatures during the curing period. A cool-down process shall be conducted that complies with the resin manufacturer's specification.

Reinstatement of Connections:
It is the intent of these specifications that the branch connections to buildings be re-instated without excavation, utilizing a remotely controlled cutting device, monitored by a CCTV. The Contractor shall certify a minimum of two complete functional cutters plus key spare components are on the job site before each installation or are in the immediate area of the jobsite and can be quickly obtained. Unless otherwise directed by the Engineer, all laterals will be reinstated. 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 to the satisfaction of the Engineer.

Inspection:
CIPP samples shall be prepared for each length of installation and delivered to the Engineer for testing. Pipe physical properties will be tested in accordance with ASTM F1216 or ASTM F1743, Section 8, using either method proposed. The flexural properties must meet or exceed the values listed in the previous table of this specification, Table 1 of ASTM F1216 or the values submitted to the Engineer by the Contractor for the project's CIPP wall design, whichever is greater.

Visual Inspection of the installed CIPP shall be in accordance with ASTM F1743, Section 8.6. It shall be continuous over its entire length and free of dry spots, lifts, groundwater infiltration, and delamination. If any of these conditions is present, that section of CIPP shall be removed and replaced.

The installation shall be inspected through the use of CCTV equipment. The Contractor shall account for all service connections being present and unobstructed. The Contractor shall provide copies of the post-installation televising video in electronic format (.mp4 format is required) on CD prior to final payment being requested. These CDs shall become property of the Village.

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 and in a manner that is satisfactory to the Engineer.

Payment: This work shall be paid for at the contract unit price per **FOOT** for

CURED-IN-PLACE-PIPE (SIZE),

which price shall include all costs associated with the labor and materials necessary to complete the work

herein described in accordance with the Specifications.

SP-14 MANHOLE LINING

This item shall consist of lining existing combined sewer manholes with a cured-in-place manhole liner. The Village reserves the right to waive sections or vary from this specification where it is determined to be in the best interest of the Village. No variations will be allowed without written approval from the Engineer.

Please note that all manholes selected for lining are approximately forty eight inches (48") in diameter. Depth varies between approximately forty eight inches (48") and one hundred fifty inches (150").

Liner system shall consist of a "stress skin" panel liner system consisting of three layers with a moisture barrier coat of modified polymer, a surfacing coat of closed-cell polyurethane/polymeric blend foam, and a final corrosion barrier coat of modified polymer. The product shall be sprayable, solvent free and specifically designed with the ability to stop infiltration and retard the effects of corrosion present in a wastewater system. The application thickness of the three layer system shall be no less than 500 mils.

Technical data and procedures for the proposed means and methods of installing this work shall be submitted for approval to the Village by the Contractor within ten (10) working days of the bid opening.

The proposed liner product shall have been in use (in identical applications) for no less than five (5) years and the manufacturer and applicator shall warrant all work against defects in materials and workmanship for a period of ten (10) years from the date of final acceptance. Failure shall include an inability to prevent the internal corrosion of the existing structure or infiltration of groundwater into the existing structure. Should either of these failures occur, any damage present shall be repaired and the liner product shall be re-installed at no cost to the Village.

The applicator shall be trained and certified by the manufacturer for the handling, mixing, application, and inspection of the proposed liner system and shall have no less than three (3) years of experience with the proposed product.

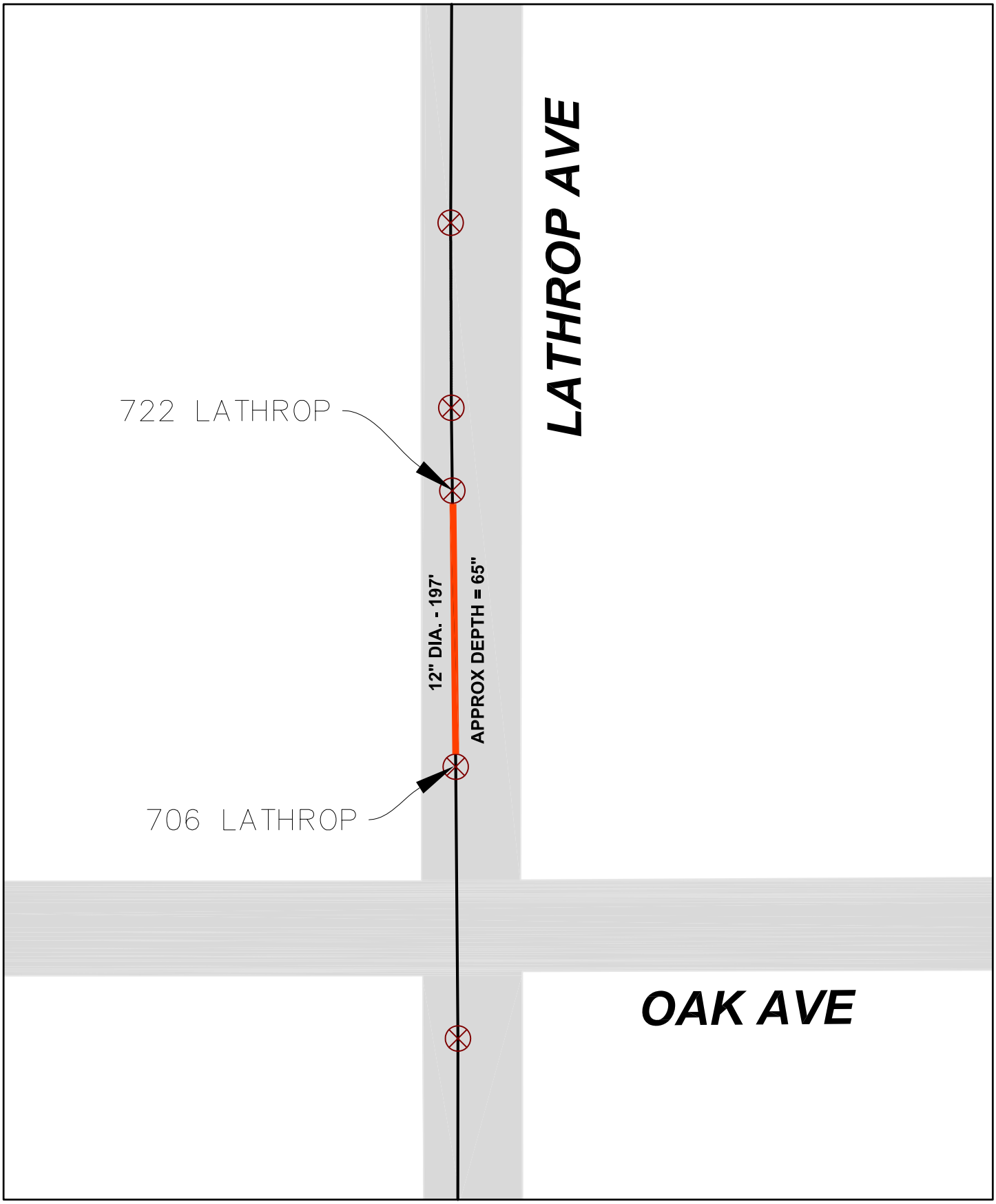
The proposed lining system shall consist of materials that are designed and manufactured to withstand the effects of the freeze/thaw cycle and hydrogen sulfide within a wastewater environment. Equipment to be used during the installation process shall be those as recommended by the manufacturer.

Bypass pumping shall be installed in accordance with the manufacturer's specifications. If needed, bypass pumping plans shall be submitted to the Engineer for approval no less than twenty four (24) hours in advance of installation.

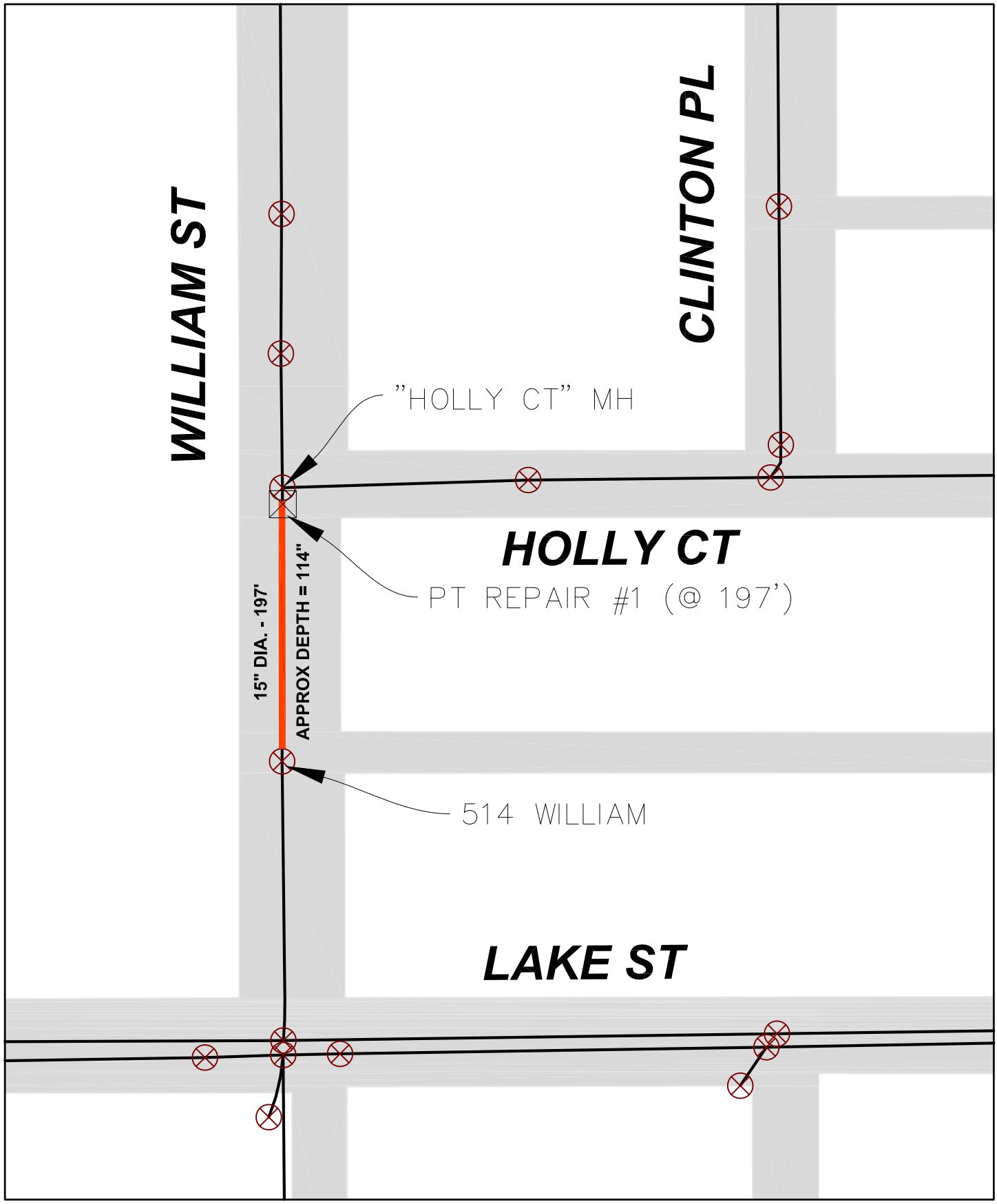
Surface preparation methods shall include high-pressure water cleaning, hydro blasting, abrasive blasting, grinding, or detergent water cleaning and shall be completed in a manner that allows for proper installation of the proposed liner system. Upon completion of all surface preparation, there shall be no tree roots, protrusions or evidence of loose concrete, brick, mortar, contaminants, or other debris that might otherwise prevent optimal installation of the liner system. Any void greater than two inches (2) in diameter shall be filled with appropriate patching material.

2018 Sewer Lining Pipe Schedule

Map	***Street***	***From***	***To***	***Diameter***	***Depth***	***Length***
1	Edgewood	550	530	12	82	158
2	Forest	507	Lake	12	118	115
2	Forest	517	507	12	102	171
2	Forest	535	517	12	90	199
2	Forest	551	535	12	85	182
3	Lathrop	722	706	12	65	197
4	William	Holly	514	15	114	197
5	Bonnie Brae	616	604	18	90	123
6	Central	7420	7515 (animal hosp)	12	110	215
7	Forest	Oak	725	9	55	285
8	Alley	Bonnie Brae MH	7213 Division MH	12	60	162
8	Alley	7213 Division MH	Harlem Ave	12	60	178
9	Monroe	Oak	712	12	63	169
10	Monroe	Oak ("Quick")	547	12	75	182
10	Monroe	547	535	12	86	153
10	Monroe	535	523	12	97	158
10	Monroe	523	510	12	104	153
10	Monroe	510	Lake	12	163	148



Location Map #3



Location Map #4