PROJECT: **2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION – CHAPEL STREET**

PROJECT NUMBER: **SSR 2016-01**

BID OPENING: **10:00 A.M.**
Friday
February 26, 2016

GNHWPCA
Protecting the Environment

GREATER NEW HAVEN
WATER POLLUTION CONTROL AUTHORITY
260 EAST STREET
NEW HAVEN, CT 06511
PHONE: 203.466.5280 FAX: 203.772.2027
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EMERGENCY NUMBER: 203-466-5260

Greater New Haven Water Pollution Control Authority
2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION – CHAPEL STREET
Project No. SSR 2016-01

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GNHWPCA
Protecting the Environment

BIDDER'S CHECKLIST

At a minimum, the following separate documents shall be completed and submitted with each bid:

1. Itemized Proposal
2. Bid Bond
3. Statement of Qualifications

§ 102-18

Greater New Haven
Water Pollution Control Authority

INVITATION

for Constructing

PROJECT: 2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION – CHAPEL STREET

GNHWPCA PROJECT NO. SSR 2016-01

Sealed bids will be received at the Office of the Director of Finance and Administration of the Greater New Haven Water Pollution Control Authority located at 260 East Street, New Haven, Connecticut 06511 for the **2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION – CHAPEL STREET PROJECT (SSR 2016-01)** until **10:00 AM on Friday, February 26, 2016** at which time and place said bids will be opened publicly and read aloud.

The proposed project includes the cured-in-place pipe (CIPP) lining rehabilitation of approximately 4,500 feet of sewer mains of various sizes, including 20”x30” brick sewers, 30”x45” brick sewers, and 12” - 18” VCP/Tile/AC/RCP.

The information for Bidders, Proposal, Form of Contract, and Specifications may be examined at the Office of the Construction Administrator at the above address. Any one submitting a bid for this project must have in their possession a copy of **THE GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY STANDARD SPECIFICATIONS dated September 12, 2006**. The document can be obtained upon payment of One Hundred Dollars ($100.00). The plans and a "bid package" containing the Invitation; Proposal; Plans; Special Specifications and Notes can be obtained upon payment of a non refundable fee of Fifty Dollars ($50.00).

There will be a non-mandatory **pre-bid meeting** on **Tuesday, February 16, 2016 at 10:00 AM** at the Greater New Haven Water Pollution Control Authority Administration Building (260 East Street, New Haven, CT 06511).

A certified check or bid bond in the amount of **fifteen percent (15%)** of the total bid amount must accompany the bid. Said checks or bid bonds will be returned to the unsuccessful bidders upon Award of the Contract to the selected firm and execution of the Agreement. If any bid is not accompanied by a bid bond or

check at the specified time for the bid opening, the incomplete bid will not be read and this action will constitute automatic rejection of the bid.

The successful bidder will be required to furnish a performance bond and a labor and materials payment bond in the form as attached to the Bid Documents for the amount of the total bid. A certified check can not be substituted for either bond. The Greater New Haven Water Pollution Control Authority reserves the right to alter quantities and to accept or reject any or all bids or any portion of any bids, for any or no reason, including unavailability of appropriated funds as it may deem to be in its best interests.

All bidders are to note that the award of this Contract is subject to the following conditions and contingencies:

1. The approval of such governmental agencies as may be required by law.

2. The appropriation of adequate funds by the proper agencies.

Gabriel Varca
Director of Finance and Administration

§ 102-16 SPECIAL SPECIFICATIONS AND NOTES

1. Location of GNHWPCA Offices

The GNHWPCA Administration Building is located at 260 East Street, New Haven, Connecticut 06511. All references in the Standard specifications to the Office of the Director of Finance and Administration shall refer to the address above.

2. Liquidated Damages

For each calendar day that any work remains uncompleted after the date specified for the completion of the work provided in the Contract, the amount of FIVE HUNDRED DOLLARS ($ 500.00) per calendar day will be deducted from any money due the Contractor, not as a penalty but as liquidated damages; provided, however, that due account shall be taken of any adjustment of the contract time of completion of the work as provided for elsewhere in the specifications.

3. Scope of Work

The Greater New Haven Water Pollution Control Authority manages, operates and maintains the wastewater treatment and collection system that serves the City of New Haven, and the Towns of East Haven, Hamden and Woodbridge, Connecticut.

Contractor shall become familiar with all sections of the **GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY STANDARD SPECIFICATIONS dated September 12, 2006** – General Provisions, Technical Specifications and Materials Section. The Standard Specifications are hereby made a part of the Contract Documents.

The purpose of this Project is to rehabilitate the existing sanitary sewer main located along Chapel Street, in New Haven, and other sewer pipe segments of different pipe sizes located in the Authority's Service Area. The proposed project includes the cured-in-place pipe (CIPP) lining of approximately 4,500 feet of sewer mains of various sizes, including 20"x30" brick sewers, 30"x45" brick sewers, and 12" - 18" VCP/Tile/AC/RCP. As part of the project the contractor shall provide cleaning services and CCTV inspection services on the areas to be rehabilitated.

The Contractor shall perform all work as necessary including preparatory cleaning, pre and post television inspections, sanitary sewer bypass, and CIPP lining in accordance with this document and the GNHWPCA Standard Specifications.

The Contractor shall be required to protect all adjoining property, all utilities and existing Roadway facilities within the Right-of-Way/Site and to repair or replace any such properties, utilities and facilities damaged or destroyed by them or their employees in performing the Work, both within and adjacent to the Right-of-Way/Site.

4. Notice to Contractors

Section 107-01: The Contractor shall observe all federal, state and local laws, ordinances, policies, practices and regulations. In addition, the Contractor agrees to promptly procure all necessary approvals, licenses and permits, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the Work.

The Contractor will be required to cooperate with all other contractors and the owners of the various utilities in and around the Site and to coordinate and arrange the sequence of their work to conform with the progressive operations of such other work. Cooperation and adjustments with the Contractors already engaged and to be engaged upon the Site is essential to properly coordinate the construction efforts of all Contractors, Utility Owners and Subcontractors engaged in the Work within and adjacent to the construction area of this Project.

The contractor shall be responsible for executing a City of New Haven Road Opening Permit before beginning construction. The contractor shall contact the City Traffic Department, to provide detours/road closure information and obtaining the City of New Haven Road Opening Permit for execution of the work. Copies of the executed permit shall be forwarded to the GNHWPCA. The contractor shall provide all necessary traffic control and police protection.

Along the brick sewers to be rehabilitated, the Authority anticipates that the Contractor may be required to modify access manholes prior to installation of CIPP lining. The existing manhole riser diameters just below the frame and cover are approximately 21 to 24-inches in diameter, gradually increasing to the bottom of the pipe.

Point Repairs (if any) will be fixed by the Authority. Contractor shall provide the exact location and limits of the point repair to the Engineer.

5. Notice to Contractors – Sequence of Work

The Authority does not have a current CCTV inspection of the sewer pipes to be rehabilitated. The Contractor shall coordinate with the Authority the execution of the cleaning/pre-lining CCTV inspection work prior to the start of CIPP lining work.

The Contractor shall submit to the Engineer a copy of the cleaning/pre-lining CCTV inspection DVDs of all pipe segments within two (2) days of completing the pre-lining CCTV inspection work for that particular segment.

Based on the results of the pre-lining CCTV inspection work the Authority may change/revise the proposed pipe segments and lengths to be rehabilitated, at no additional cost to the Authority other than the applicable unit prices bid.

6. Water Use

The Authority has been granted an "Emergency Condition" approval from the South Central Connecticut Regional Water Authority (RWA) to allow the Authority's Contractor to obtain water from hydrants in the vicinity of the project. It shall be the responsibility of the Contractor to comply with all permits conditions and requirements established by the RWA for the use such hydrants.

A hydrant permit must be obtained from the New Haven Fire Department (Denise 203-946-6220). Once this permit is obtained, a hydrant meter and backflow preventer can be obtained from RWA. RWA requires a deposit of $1,000.00 for a 3" hydrant meter and backflow preventer. The Contractor shall be responsible for installing and uninstalling the meter on a daily basis to prevent freezing and damage of the hydrant and other equipment. RWA will assign an inspector to visit the site on a daily basis to guarantee that the fire hydrant is left drained overnight. RWA will charge the Contractor an hourly rate for the services of RWA's Inspector. The meter will be read upon its return to RWA at the completion of the project. The usage will be deducted from the deposit, and a check will be mailed for any refund due. If the usage is greater than the deposit, a bill will be sent to the Contractor for the balance due. RWA's contact person is: Tony Delvecchio, Manager of Distribution and Construction (203-401-2638).

All costs associated with water used to complete the project shall be included in the contract unit price for Cured-In-Place Pipe Lining.

7. Modification of General Provisions, Section §103-01 Award of Contract

Add the following paragraph to the end of the section:

The Authority may include or exclude Bid Alternates in awarding the Bid. Alternates may be rejected by the Authority for any reason.

8. Modification of General Provisions, Section §107-06 Insurance

The Contractor is required to take out and maintain at its sole cost and expense insurance of the types specified in Section §107-06.

A. The insurance limits for this project have been modified as follows:

1. Worker's Compensation and Employer's Liability Insurance:

Employer's Liability Each Accident	$250,000
Employer's Liability Disease – Each Employee	$250,000
Employer's Liability Disease – Policy Limit	$1,000,000

2. Commercial General Liability Insurance:

Each Occurrence	$1,000,000
General Aggregate	$2,000,000

3. Business Automobile Liability Insurance:

Each Accident - Combined Single Limit	$1,000,000

4. Owner's and Contractor's Protective Liability Insurance for and in the Name of the Greater New Haven Water Pollution Control Authority:

N/A

5. Contractor's Protective Public Liability and Property Damage Liability Insurance:

N/A

6. Railroad's Protective Public Liability and Property Damage Liability Insurance:

N/A

7. Umbrella Excess Liability Insurance:

Each Occurrence	$2,000,000

8. Equipment and Installation Floater:

N/A

B. Additional special insurance requirements include:

General

1. The period of completed operations coverage for purposes of Commercial General Liability and Excess Umbrella Liability coverages

shall be two (2) years after completion and acceptance of the entirety of the work.

2. No deductible for any policy shall exceed the sum of $25,000 without prior approval by the Authority.

3. Section 107-06.10, TERMINATION OR CHANGE OF INSURANCE is replaced with the following:

   Each insurance policy shall be endorsed to provide that the insurance company shall notify the Authority by certified mail at least thirty (30) days in advance of any cancellation or material change. Such notice provision shall be absolute and unequivocal. The words “endeavor to” and “but failure to mail such notice shall impose no obligation or any liability of any kind upon the company, its agents or representatives” shall be deleted from the certificate form’s cancellation provision.

4. A sample certificate of insurance evidencing compliance with the insurance requirements as modified by these Special Specifications and Notes is attached hereto (Attachment D). Any certificates furnished by contractor shall be substantially in compliance with the attached certificate form.

9. Modification of General Provisions, Section §109-15 Maintenance Bond

The guarantee period for CIPP lining projects is three (3) years. First sentence on Section §109-15 Maintenance Bond shall be modified to read: “… and in a form acceptable to the Authority guaranteeing their work and the performance of the guarantee period CCTV inspection for a period of three (3) years from the date of final acceptance by the Authority.”

10. Call-Before-You-Dig

Public Act 87-71 of the Connecticut State statute requires individuals who use power or mechanized equipment for the purpose of disturbing the sub-surface of the earth to provide advance notice of **at least 48 hours** to the "Call Before You Dig" central clearinghouse @ 1-800-922-4455 prior to commencing proposed excavations (see Section VIII for definition of excavation/excavator).

Call Before You Dig, Inc., (CBYD) is a state regulated, nonprofit organization comprised of all public utilities and municipalities within the state of Connecticut.

The Contractor assumes all responsibilities for any damage to the various utility services, and all liabilities arising there from.

11. Modification of Technical Specifications, Item 205 – Trench Excavation and Backfill

CLASSIFICATIONS

Section B, Rock, shall be deleted and replaced with the following:

B. Rock in Trench: Rock, insofar as it applies to trench excavation, shall be defined as rock in definite ledge formation, boulders, or portions of boulders, cement masonry structures, concrete structures, portland cement concrete pavement or base, of ½ cubic yard or more in volume, removed as indicated or directed from within the payment lines for trench excavation.

Page 110, fourth paragraph, replace the word “Backfill” with “Bedding” to read as follows:

“**Bedding** on both sides of pipe and up to a depth of 1 foot over top of pipe shall be placed carefully in layers, 4 inches to 6 inches thick, and each layer will be tamped and compacted before the next layer is placed. Care must be taken that the fill is made compact and tight under the pipes. No payment will be made for such **bedding** material or the disposal of the excavated soil.”

12. Modification of Technical Specifications, Item 407 – Bituminous Concrete Trench Repair

CONSTRUCTION DETAILS

Replace last sentence under Temporary Pavement with the following:

The final pavement will be placed 60 days after the date of backfill by methods specified herein or as approved by the Engineer.

13. Modification of Technical Specifications, Item 512 – Sanitary Sewer

MATERIALS

Replace Section III. Polyvinyl Chloride Pipe (PVC), with the following:

III. Polyvinyl Chloride Pipe (PVC) shall be made of compounds conforming to ASTM D1784 manufactured in accordance with the material requirements of ASTM D3034 or ASTM F679 amended to date with the following additions and/or exceptions:

The pipe and fittings shall be made from PVC plastic having a cell classification of 12454-B as described in ASTM Specifications D-1784 for "Rigid Polyvinyl Chloride Compounds and Chlorinated Polyvinyl Chloride Compounds" as amended to date.

PVC Sewer Pipe must meet all dimensional, chemical, and physical

requirements as outlined in ASTM D3034 and ASTM F679 or ASTM F679 ANNEX. PVC Sewer Pipe shall be installed according to the requirements of ASTM D2321.

Each length of pipe shall have a bell-and-spigot or shall have furnished with it a separate jointing sleeve or coupling with rubber rings compressed into place to make a watertight closure. Joints shall be sealed with a rubber ring gasket and shall be of a composition and texture which is resistant to common ingredients of sewage and groundwater and which will endure permanently under the conditions likely to be imposed by this use, and shall meet the requirements of ASTM D3212.

All wyes, tees, bends and adapters and any other fittings required by the Engineer shall be provided. Plans for such fittings showing cross sectional views with dimensions shall be provided by the Contractor to the Engineer for approval and be approved prior to their use. Fittings shall conform to ASTM D3034 and ASTM F679.

Markings - Pipe shall be marked along the outside of the barrel in bold style type and shall indicate the manufacturer's name, pipe size, PVC cell classification, type, PVC sewer pipe, and ASTM designation.

Ratings shall be marked and indicate the manufacturer's name, nominal size, material designation "PVC", type and ASTM designation.

CONSTRUCTION DETAILS

Section 4. Foundations for Sewers; Add the following paragraph at the beginning of the section:

All bedding material surrounding sewer main pipes and sewer lateral pipes shall be wrapped in Mirafi 140N or Supac 5NP filter fabric or an approved equal conforming to the requirements of Article M.08.01.26 of the Materials Section.

14. Modification of Technical Specifications, Item 516 – Sanitary Sewer Flow Control and Bypass Pumping

DESCRIPTION

Add the following flow information at the end of the section:

Current flow metering data is not available for this project. Bypass sewer flows estimates are based on theoretical flows obtained from the Authority’s LTCP sewer model. Contractor shall provide pumps and bypass lines of adequate capacity and size to convey the following design flows:

Street	Average Daily Flow (ADF)	Design Flow (DF)
Artizan Street	40,000 gal/day	200,000 gal/day
Chapel Street	400,000 gal/day	1.5 MGD
Farren Avenue	80,000 gal/day	200,000 gal/day
Orchard Street	200,000 gal/day	600,000 gal/day
Kensington Street	200,000 gal/day	600,000 gal/day
Fairview Road		1.7 MGD

MPT plan(s) for all bypass systems must be approved by the City's Traffic Department.

CONSTRUCTION DETAILS

Add the following paragraph to Section B.7 under Construction Details:

The Contractor shall install individual bypasses for heavy water users to prevent sewer backups specially St. Raphael's Hospital. The Authority has identified other buildings along Chapel Street with multiple residential units, and other businesses. It is the contractor's responsibility to determine which customers will require an individual bypass system as it relates to their own proposed means and methods of construction. It is the contractor's responsibility to maintain lateral service to each customer and/or coordinate limited sanitary sewer use outages with the owner(s) and/or customer(s) at no additional cost to the Authority. The cost for individual building bypasses including the licensed plumber(s), special investigation(s), plumbing modifications, bypass pumps, equipments, labor, and all work incidental to or necessary for the completion of all individual bypass shall be included in the lump sum price for Item 516 Sanitary Sewer Flow Control and Bypass Pumping.

MEASUREMENT AND PAYMENT

Replace existing Measurement and Payment section with the following:

Measurement for the work specified herein will be by lump sum, as the work progresses, and as required by the plans and specifications. Partial payment of the "Lump sum" bid for Bypass Pumping shall be in accordance with the following: (Multiple set-ups and operations shall be included in the "Lump-Sum" price)

1. When initial set-up and operation of the bypass system begins, 40% of the line item will be paid.

2. The remaining portion of the line item will be paid when the bypass pumping operations for the entire job are completed.

Bypass pumping not specifically required on plans, but directed by the Engineer and/or the Inspector, will not be measured separately for payment and will be considered incidental. Repair or replacement of manhole sections disturbed as part of the bypass operations is considered incidental to the line item and will not be measured separately for payment. Construction and repair of shallow trenches to accommodate bypass lines across streets and driveways as part of the bypass operations will not be measured separately for payment and will be considered incidental.

15. Modification of Technical Specifications, Item 520 – Sanitary Sewer Cured-In-Place Pipe Lining

Replace existing specification with the enclosed Item 520 – Sanitary Sewer Cured-In-Place Pipe Lining specification, revised on July/2012.

16. Modification of Technical Specifications, Item 523 – Sanitary Sewer Manholes

MATERIALS

Replace entire Section with the following:

The materials to be used in this construction shall be those indicated on the Contract Drawings or ordered by the Engineer and they shall conform to the requirements of these specifications. All units shall be of precast reinforced concrete. Manhole sections and base shall conform to the type and size specified on the Contract Drawings and the requirements of ASTM Specification C-478. Precast manhole sections shall be joined with rubber gaskets in conformance with the provisions of ASTM Specification.

Sewer brick shall conform to the provisions of ASTM C-32, Grade MM and Grade MS. No common brick will be allowed.

Manhole frames, covers and steps shall conform to the requirements of the GNHWPCA Standard Construction Details. The lower surface of the cover and the corresponding upper surface of the frame shall be machine finished to provide a smooth flat contact or fit, so that covers shall bear uniformly on their supports without tendency for the cover to rock or rattle. Manhole steps shall comply with the provisions of ASTM C-478.

CONSTRUCTION DETAILS

Add the following paragraph:

Manhole invert shall be: formed out of manhole brick (grade MS or MM); or cast-in-place concrete with manhole brick shelf and channel; or a precast concrete manhole base. Manhole shelf shall be built to 0.8 of the diameter of the pipe

exiting the manhole. All pipe connections to manhole walls shall be cast-in flexible watertight connectors manufactured by Press-Seal Corporation or approved equal.

MEASUREMENT & PAYMENT

Replace Section 3. “Reconstruction” with the following paragraph:

Manhole reconstructions shall include all modifications made to existing manholes to allow the insertion of the lining system and/or the installation of the flow control and bypass system. Work intend is to widen the diameter of the manhole risers and to reset buried manholes needed for project access. Reconstruction of manhole sections and adjacent roadway disturbed as part of the lining process will be measured for payment at the contract unit price per linear foot of height measured to the nearest tenth of a foot from the bottom of the reconstructed section of manhole to the top of the highest point on the frame, of completed and accepted units. The price shall include damp proofing, materials, equipment, tools, labor and work incidental to or necessary for the completion of the item. The Authority will provide new manhole frame and covers to replace the existing units.

17. Modification of Technical Specifications, Item 971 - Maintenance and Protection of Traffic

MATERIALS AND METHODS

Section 9. Traffic Men, modify paragraph number three (3) to read as follows:

If the Contractor utilizes off-duty Police Personnel, payment for their services shall be made by the contractor and all costs reimbursed by the Authority. The cost of Trafficperson is a pass-through cost without markup or any additional fees.

§ 102-17 PREQUALIFICATION

A State of Connecticut DAS prequalification certificate is NOT required for this project.

Contractor shall submit a completed Statement of Qualifications form with his/her bid.

STATEMENT OF QUALIFICATIONS

_____
Bidder

_____
Address

Similar Projects Completed by Bidder:

1. **NAME OF PROJECT:** _____

OWNER: _____ **ADDRESS:** _____

DATE STARTED: _____ **DATE COMPLETED:** _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

_____

VALUE OF CONTRACT: _____

2. **NAME OF PROJECT:** _____

OWNER: _____ **ADDRESS:** _____

DATE STARTED: _____ **DATE COMPLETED:** _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

_____

VALUE OF CONTRACT: _____

3. **NAME OF PROJECT:** _____

OWNER: _____ **ADDRESS:** _____

DATE STARTED: _____ **DATE COMPLETED:** _____

APPROX. QUANTITIES OF MAJOR ITEMS: _____

_____

VALUE OF CONTRACT: _____

4. **OTHER PROJECT REFERENCES:** _____

_____

_____

ITEM 520 SANITARY SEWER CURED-IN-PLACE PIPE LINING

DESCRIPTION:

The work to be performed under this Item consists of the installation of a cured-in-place pipe lining in existing sanitary sewers of the type and size shown on the drawings or as directed by the Engineer. The intent is to correct deficiencies in the existing sewers and to extend their service life. The work shall be accomplished through the existing manholes without excavations.

The lining shall be a resin-impregnated, flexible, polyester felt, or equivalent material tube which is inserted into the sewer to be rehabilitated and cured in place by an acceptable curing method until it is tightly and rigidly fitted against the existing pipe. The lining shall have a suitable membrane coating for protection of the interior surface and to provide a uniform, smooth flow surface. The resin shall be a polyester type liquid thermosetting resin and shall be suitable for the design conditions as well as the curing process.

The new liner shall be continuous from manhole to manhole and shall be designed to carry all superimposed soil, hydrostatic and traffic loads by itself without considering any load relief from the existing sanitary sewer pipe.

Cured-in-Place Pipe Lining shall conform to the following requirements:

REFERENCES:

1. American Society of Testing and Materials (ASTM)

   C 581 Standard Practice for Determining Chemical Resistance of Thermosetting Resins Used in Glass Fiber Reinforced Structures, Intended for Liquid Service.

   D 543 Test Method for Resistance of Plastics to Chemical Reagents.

   D 790 Test Methods for Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.

   D 3567 Standard Practice for Determining Dimensions of Reinforced Thermosetting Resin Pipe (RTRP) and Fittings.

   D 3681 Test Method for Chemical Resistance of Reinforced Thermosetting Resin Pipe in a Deflected Condition.

   D 5035 Test Method for Breaking and Elongation of Textile Fabrics (Strip Method).

D 5199 Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes.

D 5813 Standard Specification for Cured-In-Place Thermosetting Resin Sewer Pipe.

F 1216 Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.

F 1743 Standard Practice for the Rehabilitation of Existing Pipelines and Conduit by Pulled-in-Place Installation of Cured-in-Place Thermosetting Resin Pipe (CIPP).

When reference is made to one of the above Standards, the revision in effect at the time of bid receipt shall apply.

MATERIALS AND EQUIPMENT

A. LINER MATERIAL - GENERAL

1. The tube shall be light-colored or white liner material to facilitate closed-circuit TV inspection shall be used.

2. The liner material, including any plastic covering and the thermosetting resin shall conform to the requirements of ASTM D5813 and F1216.

3. Resin-impregnated tube liner material shall consist of one or more layers of flexible needled felt, or equivalent woven or non-woven material.

4. Capable of carrying resin, and withstanding installation pressures and curing temperatures. The tube should be compatible with the resin system to be used on this project.

5. Able to stretch to fit irregular pipe sections and negotiate bends.

6. The length of the liner shall be sufficient to effectively carry out installation and seat the liner at the inlet and outlet pipes of each manhole. All lengths shall be verified by the Contractor prior to construction.

7. The Contractor shall be responsible for ensuring that the correct liner is installed in each sewer being rehabilitated.

8. The actual cured liner thickness shall be ± 5 percent of the approved design thickness and shall not include the thickness of the membrane coating.

9. Outside layer of tube should be plastic-coated with material compatible with resin system used.

10. The felt content of the liner shall be determined by the manufacturer but shall not exceed 25 percent of the total impregnated liner volume.

11. The resin system shall be a corrosion resistant polyester, vinyl ester, or epoxy and catalyst system that when properly cured meets the minimum requirements given herein or those that are to be utilized in the design of the CIPP liner for this project. The quantity of resin used for the tube's impregnation shall be sufficient to fill the volume of air voids in the tube with additional allowances being made for polymerization shrinkage and the anticipated 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 tube.

B. LINER MATERIAL – PHYSICAL REQUIREMENTS

Liners fabricated from resin-impregnated tubes shall meet the following physical requirements:

PROPERTY	TEST METHOD	MINIMUM VALUE
Flexural Modulus (Initial)	ASTM D790	250,000 psi
Flexural Modulus (Long Term)	ASTM D790	125,000 psi
Flexural Strength	ASTM D790	4,500 psi
Tensile Strength (Yield)	ASTM D638	3,000 psi
Tensile Modulus (Initial)	ASTM D638	300,000 psi
Tensile Modulus (Long Term)	ASTM D638	150,000 psi

CONSTRUCTION DETAILS:

The CIPP shall be installed in accordance with the practices given by ASTM F 1216 (for direct inversion installations) or ASTM F 1743 (for pulled-in-place installations). Under this item the Contractor shall perform cured-in-place pipe lining; furnish, install, operate

and maintain, and when completed remove, all necessary equipment; furnish , install impregnate and cure pipe lining materials and provide all incidentals necessary for complete sanitary sewer cured in place pipe lining in accordance with the contract documents and the requirements of these specifications.

A. SYSTEM DESCRIPTION

1. LINER DESIGN REQUIREMENTS

   a. The liner shall be designed to have a service life of a minimum of 50 years under continuous hydraulic and structural loading conditions.

   b. The liner shall be designed by a Professional Engineer Registered in the State of Connecticut.

   c. The thickness of liner system will be designed for a fully deteriorated host pipe condition. Design calculations shall be based on a minimum ovality of 2 percent, a soil unit weight of 120 pounds per cubic foot, a soil modulus of 1000 psi and a water table condition at the ground surface. Traffic loads shall be based on HS-20-44 highway loading. A minimum safety factor of 2.0 shall be used and the short term modulus of elasticity shall be reduced by 50 percent in the calculations.

   d. Manning's "n" value used for the host pipe shall be 0.015, and rehabilitated line shall be 0.013.

   e. Diameter and wall thickness of new liner shall be manufactured to size such that when installed, it will provide minimum wall thickness determined by the use of the standard flexible pipe equations as detailed in ASTM F1216.

   f. The short-term modulus of elasticity shall be reduced by 50 percent in the calculations**.**

   g. Assume that the installed CIPP shall have complete structural support, without considering structural support from existing pipe except during construction.

   h. The design of the liner shall include considerations for ring bending, deflection, combined loading, buckling, and ovality.

2. LINER PERFORMANCE REQUIREMENTS

   a. Liner system shall have minimal effect on the flow-carrying capacity

of the existing sewer, but in no case shall system capacity be reduced by more than 16 percent.

b. Liner material shall be inert to attack by domestic sewage and suitable for use in underground sewer environment.

c. Liner material shall be manufactured in such manner as to result in tight-fitting liner after installation. There shall be no measurable continuous annular space between outside diameter of new liner and the inside diameter of the existing host pipe.

B. SUBMITTALS

1. SHOP DRAWINGS

The Contractor shall submit a set of design calculations signed and sealed by the designer. These calculations shall include all stresses expected to result from the specified design loading conditions. Calculations shall include thickness calculations, and assumptions used as the basis for the design calculations

The Contractor shall submit shop drawings that identify locations and method of liner insertion.

a Shop Drawings shall be submitted for review by the Engineer at least ten (10) working days prior to start of work.

b. Submit flow control and bypass pumping plans and locations with sufficient detail to assure that Work can be accomplished without service interruption or sewage spill. The bypass pumping plan shall be in accordance with the provisions of Item 516, Sanitary Sewer Flow Control and Bypass Pumping.

c. Submit an emergency response plan to be followed in event of failure of bypass pumping system.

2. PRODUCT DATA

The Contractor shall provide manufacturer's data for lining materials and resins, and the following documentation:

a. Manufacturer's certification that liner materials are in compliance with specifications, codes, and standards referenced herein.

b. Installation instructions and details of component materials and construction details, including complete manufacturer's

recommendations for storage and handling procedures and temperature control, and inserting liner, curing details, and trimming, sealing and finishing.

c. Manufacturer's certification that liner has been properly sized to avoid creation of wrinkles or folds including field measurements, and pipe-sizing calculations.

d. Resin manufacturer's specifications, characteristics and properties of the resin, methods of application, curing temperatures, and duration of temperature (step cooking temperatures/hours at each and final stages).

e. A history of successful production of the materials to be used acceptable to the Engineer

3. CONTRACTOR QUALIFICATIONS

The Contractor performing the CIPP lining work shall be fully qualified, experienced and equipped to complete this work expeditiously and in a satisfactory manner. The Contractor shall submit the following information to the Engineer for review at the time of the bid opening**:**

a. The number of years of experience in performing this type of specialized work.

b. The name(s) of the CIPP lining manufacturer(s) and supplier(s) for the work and previous work listed below.

c. Evidence acceptable to the Engineer, such as certified copy of license or agreement, establishing that the Contractor has authority from patent owner(s) to use and/or install patented equipment, materials and methods.

d. A list of municipal clients for whom the CIPP Contractor has performed this type of work without defects or performance problems for a period of three years after installation. This list shall include the names and telephone numbers of persons who can be contacted to verify previous satisfactory performance. A description of the actual work performed. The Contractor shall write the type of installation process (inversion or pulled-in-place) that was used for the work. The list of municipal clients shall include the approximate linear footage and sizes of CIPP lining installed.

C. QUALITY CONTROL

TEST CERTIFICATES: The Contractor shall submit certificates of compliance with design and test reports in accordance with applicable ASTM test methods.

D. QUALITY ASSURANCE

1. The Contractor shall comply with the requirements of these specifications and all applicable product manufacturer's recommendations. Any conflict between product manufacturer's recommendations and any portion of these specifications shall be resolved by the Engineer prior to the start of the work.

2. Manufacturer Qualifications: Products used in the work shall be produced by manufacturers regularly engaged in the manufacture of similar items, and with history of successful production acceptable to the Engineer.

3. Installer Qualifications: Licensed by lining system manufacturer, and have the following qualifications:

   a. Thoroughly trained and experienced in necessary crafts.

   b. Completely familiar with specified requirements and methods needed for proper performance of Work.

4. All CIPP linings shall be from a single manufacturer. The supplier shall be responsible for complying with the provisions of all test requirements specified in the respective ASTM standards.

5. Pre-installation inspections of the CIPP lining material may be made by the Engineer or other representative of the Authority after delivery to the site. The CIPP shall be subject to rejection at any time prior to installation for failure to meet any of the specification requirements, even though sample CIPP may have been accepted as satisfactory at the place of the manufacturer. CIPP rejected after delivery shall be marked for identification and shall be immediately removed from the project site.

6. If the Contractor uses any material other than an approved material or a method other than an approved method, the Contractor shall, at its sole expense and with no cost to the Authority, remove the entire section of rehabilitated pipe and replace it with a new pipe as directed by the Engineer.

E. DELIVERY, STORAGE, AND HANDLING

1. The Contractor shall exercise care during transportation, handling, and

installation of the liner to ensure that the liner material is not torn, cut, exposed to direct sunlight or otherwise defective or damaged.

2. If any part of the liner material becomes torn, cut, or otherwise damaged before or during insertion, the Contractor shall repair or replace the affected section at Contractor's expense before proceeding with any additional lining work.

3. The liner shall be adequately supported and protected during delivery storage and handling. The liner shall be stored and handled according to the manufacturer's recommendations.

F. MANUFACTURERS

Subject to compliance with the requirements of the specifications, manufacturers offering products that may be incorporated in the work include, but are not limited to the following companies:

1. Insituform Technologies, Inc. CIPP
2. InLiner USA
3. Impreline Technologies
4. Cure-Line Pipe

G. GUARANTEE

All cured-in-place pipe lining and sewer lateral/sewer main connection lining systems placed shall be guaranteed by the Contractor for a period of three years from the date of acceptance by the Engineer. During this period, all serious defects discovered in the lining, as determined by the Engineer, shall be repaired in an approved manner or the liner shall be replaced at no cost to the Authority. **The Contractor shall perform a CCTV inspection prior to the end of the three year period at no additional cost to the Authority**. The cost for the Guarantee CCTV inspection shall be included in the cost for CIPP lining. This inspection shall be performed during night time low flow conditions. Bypass pumping will not be required unless during the inspection it becomes apparent that bypass pumping is necessary.

H LEGAL, SAFETY AND HEALTH REQUIREMENTS

The Contractor shall observe all federal, state and local laws, ordinances, policies, practices and regulations. In addition, the Contractor agrees to promptly procure all necessary approvals, licenses and permits, pay all charges and fees, and give all notices necessary and incident to the due and lawful prosecution of the work.

The Contractor shall conduct the work at all times in such a manner as to ensure

the safety of the traveling public. The convenience of the general public and of the residents along and adjacent to the site shall be provided for in an adequate and satisfactory manner as the Engineer may direct.

All equipment and materials shall be placed or stored in such locations so as not to be or to create the danger of becoming a hazard to the traveling public. No section of road shall be closed to the public except by permission of the Engineer and Local/State Agency with authority over roadway encroachments..

The safety provisions of applicable laws, building, construction and fire safety codes and the latest edition of the "Construction Safety Code, State of Connecticut, Labor Department", approved by the State Labor Commissioner, shall be complied with at all times.

Perform operations in strict accordance with OSHA and manufacturers' safety requirements. Particular attention is drawn to safety requirements involving entering confined spaces, work on elevated platforms, and working with pressurized equipment.

I. PROSECUTION OF THE WORK

1. EXAMINATION

   a. The Contractor shall take field measurements of pipe inside diameter of sewer lines to be rehabilitated.

   b. In conjunction with review of color closed-circuit television (CCTV) records, provide correct liner diameter and wall thickness to ensure tight fit with existing pipe to be restored.

   c. Confirm lengths of liner to be installed.

   d. Locate live services prior to rehabilitation activities. Each service connection shall be noted by size, position from reference manhole, and orientation with respect to circumference of pipe. For purposes of this specification, live services include inactive service lines to vacant lots, vacant buildings, or to occupied buildings with more than one service line serving property.

2. PREPARATION

   The Contractor shall successfully complete the following items before installation of the work.

   a. Control sewer flow.

b. Clean sewer.

c. Perform television inspection of sewer.

d. Take precautions to protect the new liner, and existing pipe and manholes from damage that might result from the liner insertion process.

3. SEQUENCE OF WORK

The Contractor shall perform work in the following sequence:

a. Divert sewer flow to comply with the requirements of Item 516, Sanitary Sewer Flow Control and Bypass Pumping.

b. Perform point repairs called out in the project documents or as directed by the Engineer.

c. Clean sewer in accordance with the requirements of Item 518, Sanitary Sewer Cleaning and perform pre-insertion television inspection to comply with the requirements of Item 522, Sanitary Sewer Television Inspection. Complete cleaning and television inspection a minimum of 24 hours prior to commencement of lining operations.

d. Install and cure liner and seal ends.

e. Perform adaptation and sealing of liner at intermediate manhole inverts, as applicable.

f. Reconnect service connections.

g. Perform post-insertion television inspection to comply with the requirements of Item 522, Sanitary Sewer Television Inspection.

4. PIPELINE POINT REPAIR

a. The Contractor shall repair pipeline where point repairs are identified in Contract documents or as directed by the Engineer in accordance with the requirements of Item 521, Sanitary Sewer Point Repairs.

b. Pipe and repair materials shall be as directed by the Engineer, unless otherwise indicated on the contract documents.

c. Trenching and excavation shall conform to the requirements of Item

205, Trench Excavation and Backfill

d. Bypassing and Dewatering: When required to maintain sanitary service, bypass sewer flow around work area, in conformance with the requirements of Item 516, Sanitary Sewer Flow Control and Bypass Pumping.

e. Notify the Engineer, a minimum of forty-eight (48) hours in advance of commencement of pipeline point repair work at each particular location.

f. Installation and Field Inspection: Installation of replacement pipe and/or repair work shall conform to the requirements of Item 512, Sanitary Sewer. All pipeline point repairs shall be inspected by the Engineer and the Authority's Inspectors prior to back filling and compaction.

5. LINER INSTALLATION - CIPP

Contractor shall perform operations in strict accordance with OSHA and manufacturer's safety requirements. Particular attention is drawn to safety requirements involving entering confined spaces, work on elevated platforms, and working with pressurized equipment.

a. The Contractor shall install liner for cured-in-place pipe in accordance with ASTM F1216.

b. *Resin Impregnation:* The Contractor shall designate a location where uncured resin in original containers and un-impregnated liner tube will be impregnated prior to installation. The Contractor shall notify the Engineer where resin impregnation will take place.

i. A vacuum impregnation process with roller system or other approved method designed to uniformly distribute resin throughout tube shall be used.

ii. The Engineer may inspect materials and "wet out" procedure.

iii. Use resin and catalyst system compatible with requirements of this method.

c. *Liner Insertion*: The Contractor shall install the liner through existing or new manholes. Unless otherwise approved in writing by the Engineer, excavation for liner insertion shall not be permitted. Ensure that pressure in liner exceeds both pressure due to

groundwater head and any pressure due to sewage in laterals or connecting side sewers.

i. Insert impregnated tube through existing or new manholes by means of installation process, and application of hydrostatic head, compressed air, or other means sufficient to fully extend it to next designated manhole or termination point.

a) Inflate and firmly adhere liner to pipe wall.

b) Install liner at rate greater than three feet per minute and less than 10 feet per minute.

ii. Prior to insertion, mark exterior of manufactured tube along its entire length at regular intervals not to exceed five (5) feet as a gauge to measure elongation during installation.

a) During insertion of resin impregnated tube into pipeline, maximum allowable longitudinal elongation or stretch of material shall be 5 percent.

b) Longitudinal stretch of tube shall be gauged by comparing markers on fully inserted tube to actual length of pipe being rehabilitated.

d. *Insertion by Inversion*: Insert wet out liner through existing manhole by means of inversion process, and application of hydrostatic head or air pressure sufficient to fully extend it to next designated manhole.

i. At lower end of standpipe or guide chute, turn liner inside out and attach to standpipe (or chute) so that a leak proof seal is created.

ii. Adjust inversion head or air pressure to be of sufficient magnitude to cause impregnated liner to invert from manhole to manhole, hold tube tight to pipe wall, and produce dimples at service lateral connections and flared ends at manholes.

iii. Use lubricant if required.

e. *Insertion by Winching*: The Engineer may accept winched-in applications as an alternate to the inversion process, provided that the liner tube and resin conform to materials and curing requirements of ASTM F1216 and these specifications.

i. Insert wet out liner through upstream manhole, and pull through section with power winch and steel cable attached to end of liner with appropriate pulling head.

ii. Provide monitoring device on cable to measure pulling force. Should the pulling force exceed manufacturer recommendations, tube shall be rejected and replaced.

iii. Install rollers in upstream and downstream manholes to guide liner into and out of host pipe, and to guard against chafing of crowns at entry and exit from winch cable.

iv. Where indicated on the contract documents, cover sewer invert throughout section to be lined with polyethylene foil or other suitable material to facilitate threading of liner and reduce risk of damage to liner material.

v. Use flexible and impermeable calibration hose to inflate tube. Calibration hose may be allowed to remain in completed installation at the discretion of the Engineer.

a) Dry liner or inflation hose material that enters existing pipe that has not been previously vacuumed impregnated with resin under controlled conditions cannot be included in structural wall of CIPP. Nominal thickness of this material shall be deducted from field sample thickness measured in order to verify that minimum specified wall thickness is achieved.

b) Hose material remaining in installation shall be compatible with resin system used, bond permanently with tube, and be translucent to facilitate post-installation inspection.

c) Hose material to be removed after curing shall be non-bondable material.

vi. Introduce water, air and/or steam into liner. Pressure will inflate and press liner material in tight fit against inner walls of host pipe, producing dimples at lateral and side connections and flared ends at manholes.

6. CURING

After insertion of tube is completed, provide suitable heat source and distribution system to distribute and re-circulate hot water, air, and/or stream throughout pipe as recommended by manufacturer.

a. Equipment shall capable of delivering hot water, air, and/or stream throughout section by means of pre-strung hose to uniformly raise temperature above temperature required to affect cure of resin.

b. Temperature shall be determined by manufacturer based on resin/catalyst system employed.

c. Perforate hose in accordance with manufacturer's recommendations, or other methods acceptable to the Engineer

d. Fit heat source piping with suitable continuous monitoring thermocouples to gauge temperature of incoming and outgoing curing medium.

e. Temperature of curing medium shall meet requirements of resin manufacturer as measured at heat source inflow and outflow return lines.

f. Place additional continuous monitoring thermocouples between impregnated felt tube and pipe invert at manholes.

g. Curing medium temperature in line during cure period shall be as recommended by resin manufacturer.

h. Ensure that elevated curing temperatures do not over stress liner materials.

i. Initial cure shall be deemed to be complete when, an inspection of the exposed portions of the liner appears to be hard and sound and remote temperature sensor indicates that temperature is of magnitude to realize exothermal curing.

    a) Cure temperature shall be held for period recommended by resin manufacturer, during which time distribution and control of curing medium shall continue.

    b) Curing time required for the resin shall be determined with due consideration for host pipe material, resin/catalyst system, ambient temperature, moisture level, and thermal conductivity of soil.

j. To ensure proper heat distribution of rehabilitation systems using heat exchange methods, and to prevent creation of flat bottoms in liner profile, the Contractor shall take steps to isolate the new liner system by temporarily stopping inflow and infiltration, and removing standing water, or by using reinforced, flexible pre-liner to isolate new liner.

k. Equipment used to supply heat and pressure shall be capable of providing necessary heat and pressure required for installation condition. Heat sources shall be fitted with suitable monitors to gage temperatures and pressures until curing is complete.

7. COOL-DOWN

Cool hardened liner to temperature below 100 degrees F before relieving pressure in section.

a. Cool-down may be accomplished by introduction of cool water or air into lined pipe to replace water or steam and water being drained.

b. Drain water from small hole made in downstream end.

c. Prevent development of vacuum during release of static head or air pressure that could damage pipe or newly installed lining.

d. After tube has cured, a sufficient cool-down period shall elapse prior to continuation of the work.

8. SEALING AT MANHOLES

If CIPP fails to make tight seal at manhole walls, apply seal consisting of resin mixture compatible with liner/resin system, in accordance with manufacturer specifications and approved by the Engineer.

a. All cutting and sealing of lining at manhole connections shall provide watertight pipe and manhole trough seals. All cut edges of the cured liner shall be thoroughly sealed with the same resin as was used in the liner. The catalyst or hardener used shall be compatible with the resin/catalyst used in the liner previously, but shall not require an external heat source to begin the exothermic reaction (curing).

b. Where the liner has been continuously laid through a manhole during installation, the cured liner shall be neatly saw cut to fit the

top of the channel through the width of the manhole base. Any void between the manhole shelf and the liner wall shall be cleaned and filled with hydraulic grout. The cut edges of the cured liner shall be sealed with resin as described above.

9. REINSTATEMENT OF SERVICES

a. Live services shall be reinstated as soon as possible.

b. Reconnect from interior of sewer line by means of a handheld cutting device or television camera and remote-controlled cutting device, appropriate for the liner material and the rehabilitated sewer pipe.

c. Excavation for service reinstatement will not be allowed.

d. Holes cut through rehabilitation liner for service laterals shall be neat and smooth, and shall match the entry invert of the service line. Coupons should be recovered at downstream manhole and removed.

e. Service openings shall be reinstated to minimum of 95 percent and maximum of 100 percent of service lateral pipe area.

f. New edges shall be brushed smooth with no loose or abraded material.

g. Seam between host pipe and new liner at reinstated service shall be free of gaps, voids, or cavities. Excessive gaps, voids, or cavities as determined by the Engineer shall be tested and sealed as described herein:

   i. Chemical grouting: The procedure for testing and sealing lateral connections from the mainline sewer with appropriate chemical grouts shall conform to the requirements of ASTM F 2454. The approved procedure uses the lateral packer method.

h. Post-construction CCTV will show focused close-up of entire perimeter of each service reconnection.

i. Provide fully-operational backup device for reinstating service laterals. If for any reason remote cutting device fails during reinstatement of service lateral, standby device shall be immediately deployed to complete reinstatement.

j. No additional payment will be made for excavations for the purpose of reopening connections and the Contractor will be responsible for all costs associated with such excavation and restoration work.

10. SEWER LATERAL / SEWER MAIN CONNECTION LINING

It is the intent of this portion of the specification to provide the requirements for the rehabilitation/reconstruction of sewer lateral connections to sewer mains, without excavation, by installation of a resin-impregnated lateral connection liner (LCL).

The LCL product shall extend from the mainline into the lateral connection in a continuous tight fitting, corrosion resistant and watertight pipe within-a-pipe to eliminate any ground water leakage and future root growth at the lateral to mainline connection.

A qualified Contractor shall have a minimum of 5 years of experience installing sewer lateral/sewer main connection lining systems. The contractor shall use a Manufactured System that has a minimum of a five-year history of satisfactory performance, and the Manufactured System shall have performed a minimum of 3,000 successful installations during this time period in the U.S. Bidders shall be prepared to submit a list of installation projects and number of lateral connections sealed providing contact names, addresses, and telephone numbers for reference.

Sewer lateral connections may be a combination of tees, wyes or break-in taps of varying sizes and angles of connection. After LCL has cured, the liner shall be a hard, impermeable seal in the lateral pipe and around the lateral connection.

If, within the warranty period, the LCL installed in the sewer system is not acceptable due to leakage or any other defects, although originally accepted, the contractor shall repair or replace the affected portion at no cost to the Authority. It is understood that if the contractor fails to do such work as required, the contractor shall be responsible for said costs of repair or replacement.

Approved manufacturers/methods include, but are not limited to the following: Formadrain LMC, Amerik Top Seal Lateral System, LMK T-Liner, Trelleborg Drain LCR, and Easy Liner Saddle Liner.

11. SEWER LATERAL/SEWER MAIN CONNECTION EPOXY-COATED REPAIR MORTAR REHABILITATION

It is the intent of this portion of the specification to provide the requirements for the rehabilitation of sewer lateral connections to sewer

mains, without excavation, by filling all voids with an epoxy-coated repair mortar as specified in this Specification.

Contractor shall reopen all of the existing active service connections in each length of sewer following installation and cooling of the liner. If, during the pre-lining television inspection, service connections are found to be visibly leaking or have visible voids between the service connection pipe and the main line sewer, those connections shall be repaired internally using an appropriate method approved by the Engineer.

Where the service connection pipe does not extend to the inside face of the brick sewer, the gap between the installed cured-in-place liner and the service connection shall be filled using an epoxy-coated repair mortar as specified in this specification. The repair mortar shall be applied such that the finished transition section is smooth, uniform and matches the inside diameter of the service connection. All installed repair mortar shall be epoxy coated. All epoxy coating and repair mortar application procedures shall be in accordance with all applicable manufacturers' instructions. The minimum thickness of the epoxy coating shall be 20 mils.

a. MORTAR

   i. Mortar for sewer transition between lateral pipes and liner shall be a single component, high strength polymer modified cementitious patching mortar. Material supplied shall have a set time of 15 to 30 minutes.
   ii. A bonding agent shall be added to the repair mortar to reinforce the bond to the existing surface.
   iii. Mortar shall be Octocrete furnished with Octoblen bonding agent as manufactured by IPA Systems, Philadelphia, PA, or approved equal.

b. EPOXY COMPOUND FOR LATERALS

   i. The epoxy coating to be applied over repair mortar at lateral pipe transitions shall be a 100% solid, corrosion resistant epoxy, capable of being applied to brick by brush or roller. The epoxy should be quick setting and specifically designed for submergence in a sanitary wastewater. The epoxy shall be capable of being applied and cured in an active sanitary sewer environment.
   ii. The epoxy compound shall be AquataPoxy A-6 as manufactured by Raven Lining systems, Tulsa, OK or approved equal.).

J. FIELD QUALITY CONTROL

1. CCTV INSPECTION

After completion of liner installation, side sewers, and finish work at manhole, sewer shall be televised according to the requirements of Item 522, Sanitary Sewer Television Inspection. The post-construction CCTV inspection that clearly shows the entire perimeter of each service reconnection shall be performed.

a. Finished liner shall be continuous over entire length of liner insertion run between manholes, and free from visual defects such as foreign inclusions, dry spots, pinholes, and de-lamination.

b. Wrinkles in finished liner pipe which cause backwater of one inch (25 mm) or more, or reduce hydraulic capacity of pipe (wrinkles which exceed 5 percent of pipe diameter) and wrinkles in finished liner that reduce structural stability of pipe are unacceptable and affected sections of lined pipe will be removed and repaired at no additional cost to the Authority.

c. In the event that the Engineer, based on post installation CCTV inspections, has reasonable cause to suspect that annular space exists between liner and host pipe, Contractor will be directed to excavate and expose existing sewer and remove existing host pipe such that confirmation of suspected annular space can be made.

i. If annular space is determined to exist, repair in manner approved by the Engineer.

ii. If it is determined that no annular space exists, Contractor shall be reimbursed in accordance with **§ 109-04, Extra and Force Account Work.**

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

K. TESTING FOR CERTIFICATION

1. The Contractor shall provide sufficient specimens from each length of CIPP Lining installed to allow an independent laboratory to conduct three separate tests for each of the flexural and tensile properties of the liner as

specified below. The specimens shall be cut from each installed liner at an intermediate point, the termination point or from the downtube after the liner has been cured and cooled. Each specimen shall be clearly marked to indicate the installed location of the liner, the date of installation, the pipe diameter and the resin used.

The following test shall be performed for each length of CIPP lining installed: Short-Term Flexural (Bending) Properties -The initial tangent flexural modulus of elasticity and flexural yield strength shall be measured in accordance with ASTM D790.

2. Copies of the certified test results shall be sent directly to the Engineer by the laboratory. The certified results shall report the actual test results obtained for all three specimens used for each test, the average of the three results and the standard deviation of the results for each of the properties being tested.

3. Each individual reported value shall meet or exceed the value of that property as specified in this Item or as used in the design calculations, whichever is higher.

4. **All the expenses incurred relating to the certified testing of the Cured-in-Place Pipe lining furnished under this Contract, shall be paid for by the Contractor.**

L. CLEAN UP

The Site shall be cleaned on a continuous, daily basis during performance of the work and shall be cleaned upon completion so that the Project Site shall be left in a neat and orderly condition acceptable to the Engineer.

MEASUREMENT AND PAYMENT:

Sanitary Sewer Cured-in-Place Pipe Lining

This work will be measured for payment by the actual number of linear feet of each size of sanitary sewer lined with cured-in-place pipe lining, measured along the centerline of the sanitary sewer from the center of the insertion manhole to the center of the last manhole.

This work shall be paid for at the contract unit price per linear foot of “Sanitary Sewer Cured-in-Place Pipe Lining (Size), completed, which price shall include all materials, labor, tools, and equipment incidental and necessary to furnish and install the resin-impregnated, liner in existing sewers and cutting and sealing of the liner at termination manholes.

Re-establish House Service Connections

This work will be measured for payment by the actual number of house service connections re-established by the Contractor at the unit price bid for each.

This work will be paid for at the contract unit price per each of "Re-establish House Service Connections," completed, which price shall include all materials, labor, tools, and equipment incidental and necessary to re-establish house service connections.

Cut Protruding Taps

This work will be measured for payment by the actual number of protruding taps of each type cut by the Contractor at the unit price bid for each.

This work will be paid for at the contract unit price per each of "Cut Protruding (Type) Taps" completed, which price shall include all materials, labor, tools, and equipment incidental and necessary to cut protruding taps to within 1/8 inch of sewer main wall.

Sewer Lateral/Sewer Main Connection Lining

This work will be measured for payment by the actual number of sewer lateral/sewer main connections lined by the Contractor at the unit price bid for each.

This work will be paid for at the contract unit price per each of "Sewer Lateral/Sewer Main Connection Lining," completed, which price shall include all materials, labor, tools, and equipment incidental and necessary to furnish and install the resin-impregnated, liner in existing sewer lateral connections.

Sewer Lateral/Sewer Main Connection Epoxy-Coated Repair Mortar Rehabilitation

This work will be measured for payment by the actual number of sewer lateral/sewer main connections rehabilitated by the Contractor at the unit price bid for each.

This work will be paid for at the contract unit price per each of "Sewer Lateral/Sewer Main Connection Epoxy-Coated Repair Mortar Rehabilitation," completed, which price shall include all materials, labor, tools, and equipment incidental and necessary to furnish and install an epoxy-coated repair mortar to rehabilitate sewer lateral connections.

Flow Control and Bypass Pumping

If there is no quantity shown in the bidding schedule for payment for the cost of Item 516 Sanitary Sewer Flow Control and Bypass Pumping, the work covered by this section shall be included in the contract unit price for Item 520, Sanitary Sewer Cured-in-Place Pipe Lining.

Other Items of Work

Cleaning will be measured and paid for in accordance with the provisions of Item 518, Sanitary Sewer Cleaning.

For Television Inspection (Item 522) in connection with the installation of Sanitary Sewer Cured-In-Place Pipe Lining, the work will be measured for payment by the number of linear feet, measured along the centerline of the sanitary sewer from the center of the manhole to the center of the manhole. **The actual number of linear feet shall only be measured and paid for once and the unit price bid shall include the cost of the pre-insertion, post-insertion and final guarantee television inspections of the sanitary sewer lined with cured-in-place pipe lining.**

Point Repairs will be measured and paid for in accordance with the provisions of Item 521, Sanitary Sewer Point Repairs.

Maintenance and Protection of Traffic will be measured and paid for in accordance with the provisions of Item 971, Maintenance and Protection of Traffic.

When no price for Items 518, Sanitary Sewer Cleaning; Item 522, Sanitary Sewer Television Inspection; or Item 971, Maintenance and Protection of Traffic, is asked for on the Proposal Form, the cost of the Work as shown on the Contract Documents shall be included in the cost of Item 520.01, Sanitary Sewer Cured-in-Place Pipe Lining and no direct payment for the individual items will be made.

Item No.	Pay Item	Pay Unit
520.01	(Size) Sanitary Sewer Cured-In-Place Pipe Lining	Linear Foot
520.10	Re-establish House Service Connection	Each
520.11	Cut Protruding (Type) Taps	Each
520.12	Sewer Lateral/Sewer Main Connection Lining	Each
520.13	Sewer Lateral/Sewer Main Connection Epoxy-Coated Repair Mortar Rehabilitation	Each

§ 102-20

ITEMIZED PROPOSAL

For Constructing

PROJECT: 2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION CHAPEL STREET PROJECT

GNHWPCA PROJECT NO. SSR 2016-01

The work proposed herein must be completed by June 30, 2016.

Greater New Haven
Water Pollution Control Authority
260 East Street
New Haven, Connecticut 06511

To Whom It May Concern,

In submitting this bid the duly authorized undersigned declares that the entity on behalf of which this bid is made is, or they are, the only person or persons interested in the said bid; that the bid is made without any connection with any person making another bid for the same contract; that the bid is in all respects fair and without collusion, fraud or mental reservation; and that no official of the Greater New Haven Water Pollution Control Authority, or any person in the employ of the Authority is directly or indirectly interested in said bid or in the supplies or work to which it relates, or in any portion of the profits thereof.

The undersigned also hereby declares that they have, either for themselves or on behalf of the entity they represent, carefully examined the Plans, specifications, and form of Contract for this Project, have personally inspected the actual location of the Work and have considered potential local sources of supply, and are satisfied as to all the quantities and conditions, and understands that in signing this Proposal they or the entity that they represent waives all rights to plead any misunderstanding regarding the same.

The undersigned further understands and agrees that they are to furnish and provide for the respective item price bid all the necessary material, machinery, implements, tools, labor, services, and other items of whatever nature, and to do and perform all the Work necessary under the aforesaid conditions, to complete the improvements of the Project, which Plans and specifications it is agreed are a part of this Proposal, and to accept in full compensation therefore the amount of the summation of the products of the approximate quantities multiplied by the unit prices bid. This summation will hereinafter be referred to as the gross sum bid.

The undersigned further agrees to accept the aforesaid unit bid prices in compensation for any additions or deductions caused by any variation in quantities due to more

accurate measurement, or by any changes or alterations in the Plans or specifications of the Work and for use in the computation of the value of the Work performed for monthly estimates.

Every Proposal must be accompanied by a certified check or bank cashier's check or bid bond payable to the Greater New Haven Water Pollution Control Authority in the amount of fifteen percent (15%) of the bid.

Accompanying this Proposal is a certified check or bank cashier's check or bid bond payable to the Greater New Haven Water Pollution Control Authority in the amount of $_____. In case this Proposal shall be accepted by the Authority, and the undersigned shall fail to execute the Contract, the monies represented by such certified check or bank cashier's check or bid bond shall be regarded as liquidated damages and shall be forfeited and become the property of the Authority. The undersigned understands and accepts:

A. When Work is required in which no specific payment item is listed on the Proposal Form, the cost of such Work shall be included in the unit prices bid.

B. All unit prices, lump sums, etc. listed in the bid Proposal are firm and not subject to change for ninety (90) days from the day bids are opened.

C. Within ten (10) days from the date of a notice of acceptance of this Proposal, the undersigned agrees to execute the Contract and to furnish to the Authority a satisfactory "Faithful Performance Bond" and "Labor and Material Payment Bond" in the amount of one hundred percent (100%) of the Contract price.

D. Time is of the Essence. All Work to be performed under the Contract shall be completed within the time stated in the Agreement for the Project or within such extended time for completion as may be granted by the Authority.

E. ~~As a condition of the Contract Award, the successful Bidder shall provide proof, from the Connecticut Secretary of State's office, of its current authorization to do business in Connecticut. All Connecticut corporations must provide a Certificate of Good Standing from the Secretary of State's Office. All foreign (out of State) corporations shall provide a valid license to do business in Connecticut, in the form of a current Certificate of Authority from the Secretary of State's office and evidence of compliance with the bond requirements of the Connecticut Department of Revenue Services. These documents must be presented within thirty (30) days from the date of the bid opening~~.

Bidder acknowledges receipt of the Addenda listed below and further acknowledges that the provisions of each Addendum have been included in the preparation of this bid.

Addendum No.	Date Received	Addendum No.	Date Received
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

COMPANY NAME (BIDDER): _____

Address of Bidder: _____

_____

Phone Number: Area Code (_____) _____

I hereby sign this document acting within my authority as a duly authorized representative of the named Bidder. By signing below, I certify, acknowledge and affirm that the information set forth in this document is true, accurate and complete to the best of my knowledge and belief.

Signature of Bidder: _____ **Dated:** _____

Name and Addresses of Members of the Firm:

_____

_____

_____

GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY
Project: 2016 Collection System Assessment and Rehabilitation - Chapel Street Project
Project Number: SSR 2016-01

Schedule Of Bid Items

ITEM NUMBER	ESTIMATED QUANTITY	UNIT	ITEM WITH UNIT PRICE WRITTEN IN WORDS	UNIT BID PRICE DOLLARS	UNIT BID PRICE CTS	AMOUNT BID DOLLARS	AMOUNT BID CTS
516	1	LS	Lump Sum Sanitary Sewer Flow Control and Bypass Pumping For -				
518.01.2	895	LF	Linear Foot Sanitary Sewer Hydraulic Cleaning (Heavy) 30"x45" Brick Sewer For -				
518.01.4	2120	LF	Linear Foot Sanitary Sewer Hydraulic Cleaning (Light) 20"x30" Brick Sewer For -				
518.01.6	990	LF	Linear Foot Sanitary Sewer Hydraulic Cleaning (Light) 18" VCP For -				
518.01.8	560	LF	Linear Foot Sanitary Sewer Hydraulic Cleaning (Light) 12" VCP For -				
520.01.1	895	LF	Linear Foot 30"x45" Sanitary Sewer CIPP Lining For -				
520.01.4	2120	LF	Linear Foot 20"x30" Sanitary Sewer CIPP Lining For -				

GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY
Project: 2016 Collection System Assessment and Rehabilitation - Chapel Street Project
Project Number: SSR 2016-01

Schedule Of Bid Items

ITEM NUMBER	ESTIMATED QUANTITY	UNIT	ITEM WITH UNIT PRICE WRITTEN IN WORDS	UNIT BID PRICE DOLLARS	UNIT BID PRICE CTS	AMOUNT BID DOLLARS	AMOUNT BID CTS
520.01.6	990	LF	Linear Foot 18" Sanitary Sewer CIPP Lining For -				
520.01.7	560	LF	Linear Foot 12" Sanitary Sewer CIPP Lining For -				
520.10	134	EA	Each Re-establish House Service Connections For -				
520.11.1	20	EA	Each Cut Protruding (Cast/Plastic) Taps For -				
520.11.2	10	EA	Each Cut Protruding (Concrete) Taps For -				
520.11.3	10	EA	Each Cut Protruding (DI/CI) Taps For -				
522.02	895	LF	Linear Foot Sanitary Sewer CCTV Inspection, 30"x45" Brick For -				
522.04	2120	LF	Linear Foot Sanitary Sewer CCTV Inspection, 20"x30" Brick For -				

GREATER NEW HAVEN WATER POLLUTION CONTROL AUTHORITY
Project: 2016 Collection System Assessment and Rehabilitation - Chapel Street Project
Project Number: SSR 2016-01

Schedule Of Bid Items

ITEM NUMBER	ESTIMATED QUANTITY	UNIT	ITEM WITH UNIT PRICE WRITTEN IN WORDS	UNIT BID PRICE DOLLARS	UNIT BID PRICE CTS	AMOUNT BID DOLLARS	AMOUNT BID CTS
522.06	990	LF	Linear Foot Sanitary Sewer CCTV Inspection, 18" VCP For -				
522.08	560	LF	Linear Foot Sanitary Sewer CCTV Inspection, 12" VCP For -				
523.03	30	LF	Linear Foot Reconstruct Sanitary Sewer Manhole For -				
971	1	LS	Lump Sum Maintenance and Protection of Traffic For -				
971.01	1	All	Allowance Traffic Men For - Thirty Thousand Dollars and No Cents	$ 30,000	. 00	$ 30,000	. 00
975	1	LS	Lump Sum Mobilization For -				

BASE BID
TOTAL OR GROSS SUM IN WORDS: _____ $ _____
IN FIGURES

Signature of Bidder: _____ Dated: _____

Printed Name: _____

Name of Firm: _____

APPENDIX A

PERFORMANCE BOND
AND
LABOR AND MATERIALS PAYMENT BOND

PROJECT: 2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION

GNHWPCA PROJECT NO. SSR 2016-01

BOND NO. _____

PAYMENT BOND (incorporating C.G.S. § 49-41)

KNOW ALL MEN BY THESE PRESENTS: That by this Bond, we, _____ (hereinafter called the "Principal") and _____ (hereinafter called the "Surety"), located at _____, a surety insurer chartered and existing under the laws of the State of _____ and authorized to do business in the State of Connecticut, are held and firmly bound unto the Greater New Haven Water Pollution Control Authority (hereinafter called "Owner") in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, personal representatives, executors, successors and assigns, jointly and severally.

WHEREAS, Principal and the Owner have reached a mutual agreement (hereinafter referred to as the "Contract") for the purpose of _____, said Contract being made a part of this Bond by this reference.

NOW, THEREFORE, THE CONDITION OF THIS BOND is that if the Principal:

1. Promptly makes payments to all claimants supplying the Principal with labor, materials or supplies, as used directly or indirectly by the Principal in the prosecution of the work provided for in the Contract; and

2. Pays the Owner for all losses, damages, expenses, costs, and attorneys' fees, including the costs of any mediation, arbitration, litigation or appellate proceedings, that the Owner sustains because of a default by the Principal under paragraph 1 of this Bond, then this Bond is void; otherwise this Bond remains in full force and effect.

BE IT FURTHER KNOWN:

Any changes in or under the Contract and compliance or noncompliance with formalities connected with the Contract or alterations which may be made in the terms of the said Contract, or in the work to be done under it, or the giving by the Owner of any extension of time for the performance of the said Contract, or any other forbearance on the part of the Owner or Principal to the other, shall not affect the obligation of the Principal and the Surety, or either of them, their heirs, personal representatives, successors or assigns under this Bond, notice to the Surety of any such changes, alterations, extensions or forbearance being hereby waived.

This Bond is issued in accordance with and expressly incorporates herein the requirements of Conn. Gen. Stat. § 49-41.

IN WITNESS WHEREOF, the above parties have executed this instrument this ____ day of _____, 200__, the name of each party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered in the presence of:

Witnesses as to Principal:

_____

_____

PRINCIPAL:

By:_____

Name:_____

Its:_____

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 200__ by _____ as _____ of _____, a _____ [corporation/limited liability company /partnership], on behalf of the _____ [corporation/limited liability company/partnership]. [He/She] is personally known to me or who has produced _____ as identification and who [did] [did not] take an oath.

My Commission Expires:

_____

Notary Public (Signature)

(AFFIX NOTARY SEAL)

_____

(Printed Name)

_____

(Title or Rank)

_____

(Serial Number, if any)

ATTEST:

SURETY:

Witnesses as to Surety:

_____
(Printed Name)

_____ _____
(Business Address)

_____ _____
(Authorized Signature)

_____
(Printed Name)

OR

Witnesses as to Attorney-in-Fact:

_____
As Attorney-in-Fact
(Attach Power of Attorney)

_____ _____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this ____ day of _____, 200__ by _____, as _____ of _____, a Surety, on behalf of the Surety. [He/She] is personally known to me or who has produced _____ as identification and who [did] [did not] take an oath.

My Commission Expires:

_____
Notary Public (Signature)

(AFFIX NOTARY SEAL)

_____
(Printed Name)

_____
(Title or Rank)

_____
(Serial Number, if any)

BOND NO. _____

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That _____ as Principal, and _____, as Surety, located at _____ (Business Address), a surety insurer chartered and existing under the laws of the State of _____ and authorized to do business in the State of Connecticut, are held and firmly bound unto the Greater New Haven Water Pollution Control Authority, as Obligee, in the sum of _____ ($_____) for the payment whereof we bind ourselves, our heirs, executors, personal representatives, successors and assigns, jointly and severally.

WHEREAS, Principal has entered into a contract dated as of the ___ day of _____, 200__ with Obligee for

_____

_____

_____

in accordance with drawings and specifications, which contract is incorporated by reference and made a part hereof, and is referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS BOND is that of Principal:

1. Performs the Contract at the times and in the manner prescribed in the Contract; and

2. Pays Obligee any and all losses, damages, expenses, costs, direct or indirect, and attorney's fees, including costs of any mediation, arbitration, litigation or appellate proceedings, that Obligee sustains because of any default by Principal under the Contract, including, but not limited to, all delay damages, whether liquidated or actual, incurred by Obligee;

then this Bond is void; otherwise it remains in full force and effect and Surety shall be fully liable for performance of the Principal's obligations provided thereunder.

In the event of a declaration of default of Principal by Obligee under the Contract, the Surety shall, within twenty (20) days of receipt of notice of such default, either: (1) tender the Obligee the full amount of the penal sum of this Bond; or (2) undertake to perform or complete the remaining Contract obligations itself through its agents or through independent contractors.

If Surety denies liability, in whole or in part, it shall notify the Obligee, in writing, citing the detailed reasons therefor, within fifteen (15) days of receipt of the aforesaid declaration of default of Principal.

The Surety, for value received, hereby stipulates and agrees that no changes, extensions of time, or additions to the terms of the Contract, or other work to be performed hereunder, or the specifications referred to therein shall in anyway affect its obligations under this Bond, and it does hereby waive notice of any such changes, extensions of time, alterations, or additions to the terms of the Contract, to the work thereunder or to the specifications.

In no event will the Surety be liable in the aggregate to Obligee for more than the penal sum of this Performance Bond, regardless of the number of suits that may be filed by Obligee.

Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the State of Connecticut and shall be instituted within the applicable statute of limitations for contract actions after Principal defaults.

IN WITNESS WHEREOF, the above parties have executed this instrument this ____ day of _____, 200__, the name of each party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

Signed, sealed and delivered
in the presence of:

PRINCIPAL

Witnesses as to Principal:

By:_____

_____

Name:_____

_____

Its:_____

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 200____ by _____, as _____ of _____, a _____ [corporation/limited liability company/partnership], on behalf of the [corporation/limited liability company/partnership]. [He/She[is personally known to me or what has produced _____ as identification and who [did] [did not] take an oath.

My Commission Expires:

_____
Notary Public (Signature)

(AFFIX NOTARY SEAL)

_____

_____
(Printed Name)

_____
(Title or Rank)

_____
(Serial Number, if any)

ATTEST:

SURETY:

Witnesses as to Surety:

_____
(Printed Name)

_____ _____
(Business Address)

_____ _____
(Authorized Signature)

_____
(Printed Name)

OR

Witnesses as to Attorney-in-Fact:

_____
As Attorney-in-Fact
(Attach Power of Attorney)

_____ _____
(Business Address)

_____
(Printed Name)

_____
(Telephone Number)

STATE OF _____

COUNTY OF _____

The foregoing instrument was acknowledged before me this _____ day of _____, 200____ by _____, as _____ of _____, a _____ [corporation/limited liability company/partnership], on behalf of the [corporation/limited liability company/partnership]. [He/She[is personally known to me or what has produced _____ as identification and who [did] [did not] take an oath.

My Commission Expires:

_____
Notary Public (Signature)

(AFFIX NOTARY SEAL)

_____

_____
(Printed Name)

_____
(Title or Rank)

_____
(Serial Number, if any)

APPENDIX B

Insurance Certificate

PROJECT: 2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION

GNHWPCA PROJECT NO. SSR 2016-01

SAMPLE

Certificate of Insurance

Issue Date (MM/DD/YY)

PRODUCER

INSURED

Contractor's Name

INSURERS AFFORDING COVERAGE			NAIC #
INSURER	A		
INSURER	B		
INSURER	C		
INSURER	D		
INSURER	E		

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	Limits	
	GENERAL LIABILITY	POLICY NUMBER				
	COMMERCIAL GENERAL LIABILITY	PER PROJECT AGGREGATE ENDORSEMENT			EACH OCCURRENCE	$ 1,000,000
	CLAIMS MADE [ ] OCCUR. [x]				PRODUCTS-COMP/OP AGG.	$ 2,000,000
					PERSONAL & ADV INJURY	$
x	ISO FORM CG 00 01 12 04				GENERAL AGGREGATE	$ 2,000,000
x	XCU HAZARDS COVERAGE				FIRE DAMAGE (Any one fire)	$
	GEN'L AGGREGATE LIMIT APPLIES PER:				MED. EXPENSE (Any one person)	$
	POL-ICY [ ] PRO-JECT [x] LOC [ ]					
	AUTOMOBILE LIABILITY	POLICY NUMBER PER PROJECT ENDORSEMENT			COMBINED SINGLE LIMIT PER ACCIDENT	$ 1,000,000
x	ANY AUTO					
	ALL OWNED AUTOS					$
	SCHEDULED AUTOS [x] OCCUR					
	HIRED AUTOS					$
	NON-OWNED AUTOS					
	GARAGE					$
	EXCESS LIABILITY	POLICY NUMBER				
x	INCLUDEDUMBRELLA FORM [x] OCCUR	PER PROJECT ENDORSEMENT			EACH OCCURRENCE	2,000,000
					AGGREGATE	$ 2,000,000
	WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY	POLICY NUMBER			x STATUTORY LIMITS	
					EACH ACCIDENT FOR BODILY INJURY	$ 250,000
		COVERAGE APPLIES IN STATE OF JOB SITE/OPERATION UNDER THIS SUBCONTRACT			DISEASE-POLICY LIMIT	$ 1,000,000
	THE PROPRIETOR, PARTNERS , EXECUTIVE OFFICERS ARE: [ ] INCL. [ ] EXCL.	USUAL COVERAGE IS INCLUDED WHERE NEEDED			EACH EMPLOYEE FOR BODILY INJURY BY DISEASE	$ 250,000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

1. All operations performed under **[Project Name] project, Street Address, City, State Zip.** _____ Project Number _____. The following are included as Additional Insured (Endorsement ISO Form CG 20 10 11 85 or equivalent) for all coverages except Workers' Compensation: The Greater New Haven Water Pollution Control Authority, its directors, officers, employees, subsidiaries & affiliates; **[list any others as identified by the contract documents ("Additional Insureds")]**.
2. All policies except workers' compensation are primary and non-contributing with any insurance maintained by Additional Insureds.
3. All policies contain an express waiver of subrogation rights against Additional Insureds.
4. For commercial general liability and excess liability coverages Additional Insureds are covered for liability arising out of named insured's ongoing and completed operations.
5. Listing of all endorsements to all policies identified on this certificate is attached hereto and incorporated herein.
6. All policies are occurrence based and project specific.

CERTIFICATE HOLDER

The Greater New Haven Water Pollution Control Authority
260 East Street
New Haven, CT 06511
Attn: Gabriel Varca

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED ** BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT.

AUTHORIZED REPRESENTATIVE

***NON-RENEWED OR MATERIALLY CHANGED*

APPENDIX C

Prevailing Wage Rates

PROJECT: 2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION

GNHWPCA PROJECT NO. SSR 2016-01

APPENDIX D

Schedule of Sewers to Be Rehabilitated

PROJECT: 2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION

GNHWPCA PROJECT NO. SSR 2016-01

SSR 2016-01 : Schedule of Sewers to be Cleaned, CCTV Inspected and Rehabilitated

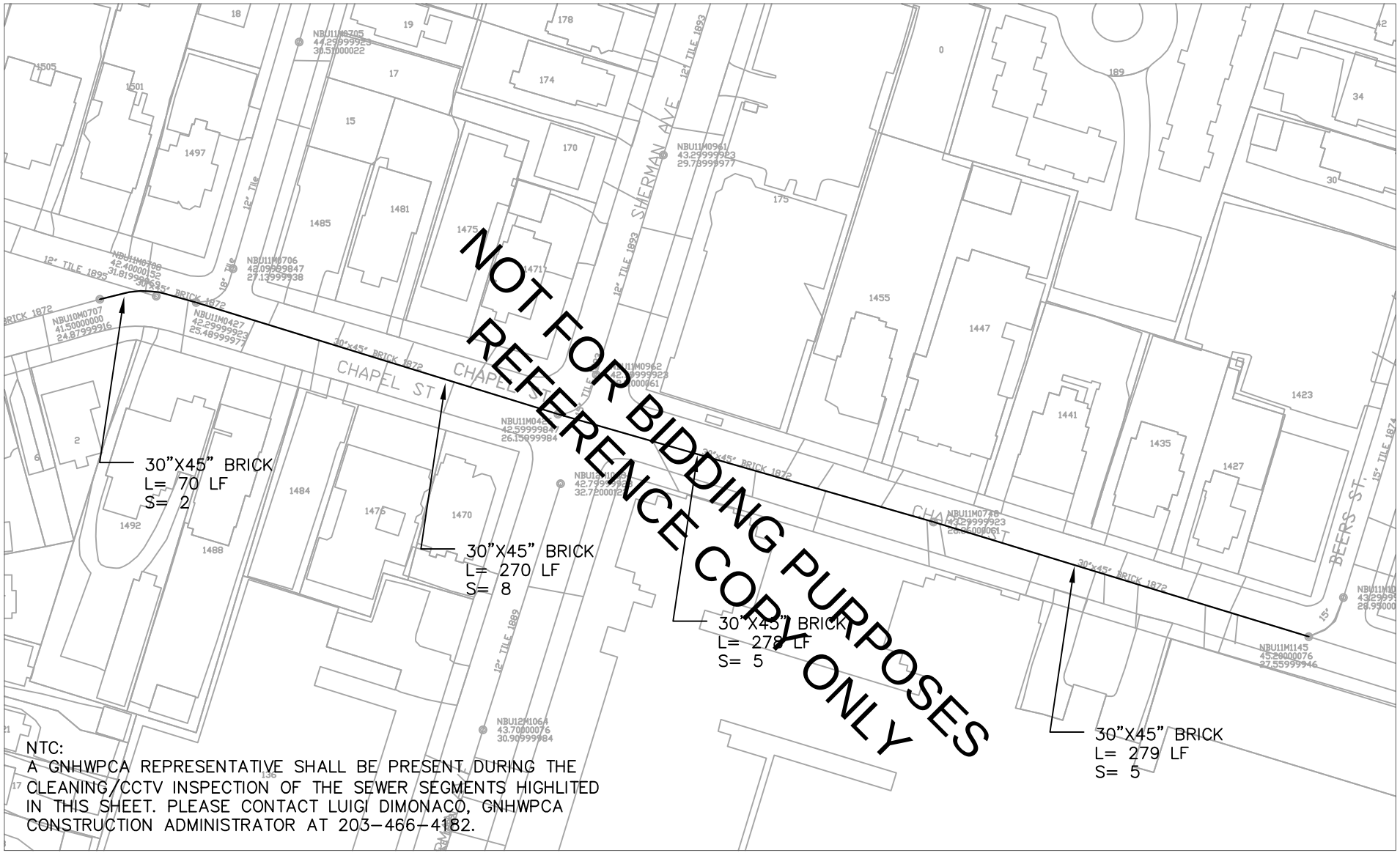
Street	Upstream Manhole	Downstream Manhole	Cleaning	CCTV	CIPP	Diameter (in)	Length (lf)	No. laterals	Sheet Number
CHAPEL	NBU11M1145	NBU11M0748	X	X	X	30X45	279	5	1
CHAPEL	NBU11M0748	NBU11M0426	X	X	X	30X45	278	5	1
CHAPEL	NBU11M0426	NBU11M0427	X	X	X	30X45	270	8	1
CHAPEL	NBU11M0427	NBU10M0707	X	X	X	30X45	70	2	1
CHAPEL	NUN04M0702	NUN04M0703	X	X	X	20X30	218	10	2
CHAPEL	NUN04M0703	NUN04M0704	X	X	X	20X30	58	4	2
CHAPEL	NUN04M0704	NUN04M0861	X	X	X	20X30	154	6	2
CHAPEL	NUN04M0861	NUN04M0832	X	X	X	20X30	223	6	2
CHAPEL	NUN04M0832	NUN04M0833	X	X	X	20X30	224	5	2
CHAPEL	NUN04M0833	NUN04M0838	X	X	X	20X30	24	0	2
ORCHARD	NBU11M0973	NBU11M0975	X	X	X	20X30	209	7	3
ORCHARD	NBU11M0975	NBU11M1061	X	X	X	20X30	205	8	3
ORCHARD	NBU11M1061	NBU11M1144	X	X	X	20X30	206	5	3
KENSINGTON	NBU11M0964	NBU11M0965	X	X	X	20X30	43	0	4
KENSINGTON	NBU11M0965	NBU11M0970	X	X	X	20X30	165	6	4
KENSINGTON	NBU11M0970	NBU11M1060	X	X	X	20X30	168	4	4
KENSINGTON	NBU11M1060	NBU11M1142	X	X	X	20X30	263	6	4
ARTIZAN	NEA02M0036	NEA02M0367	X	X	X	12	87	2	5
ARTIZAN	NEA02M0367	NEA02M0037	X	X	X	12	92	2	5
ARTIZAN	NEA02M0037	NEA02M0366	X	X	X	12	104	2	5
ARTIZAN	NEA02M0366	NEA02M0038	X	X	X	12	47	0	5
ARTIZAN	NEA02M0038	NEA02M0039	X	X	X	12	195	4	5
ARTIZAN	NEA02M0039	NEA02M0021	X	X	X	12	38	0	5
FARREN	NQL04M0389	NQL04M0390	X	X	X	18	415	18	6
FARREN	NQL04M0390	NQL04M0391	X	X	X	18	363	18	6
FARREN	NQL04M0391	NQL04M0559	X	X	X	18	71	1	6
FAIRVIEW	EMG03M0019	EMG03M0128	X	X	X	18	104	0	7
FAIRVIEW	EMG03M0128	Pump station	X	X	X	18	37	0	7

APPENDIX E

Contract Drawings

PROJECT: 2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION

GNHWPCA PROJECT NO. SSR 2016-01



PLAN

1" = 100'

LEGEND

L= LINEAR FEET OF PIPE
S= No. OF SERVICE LATERALS PRESENT

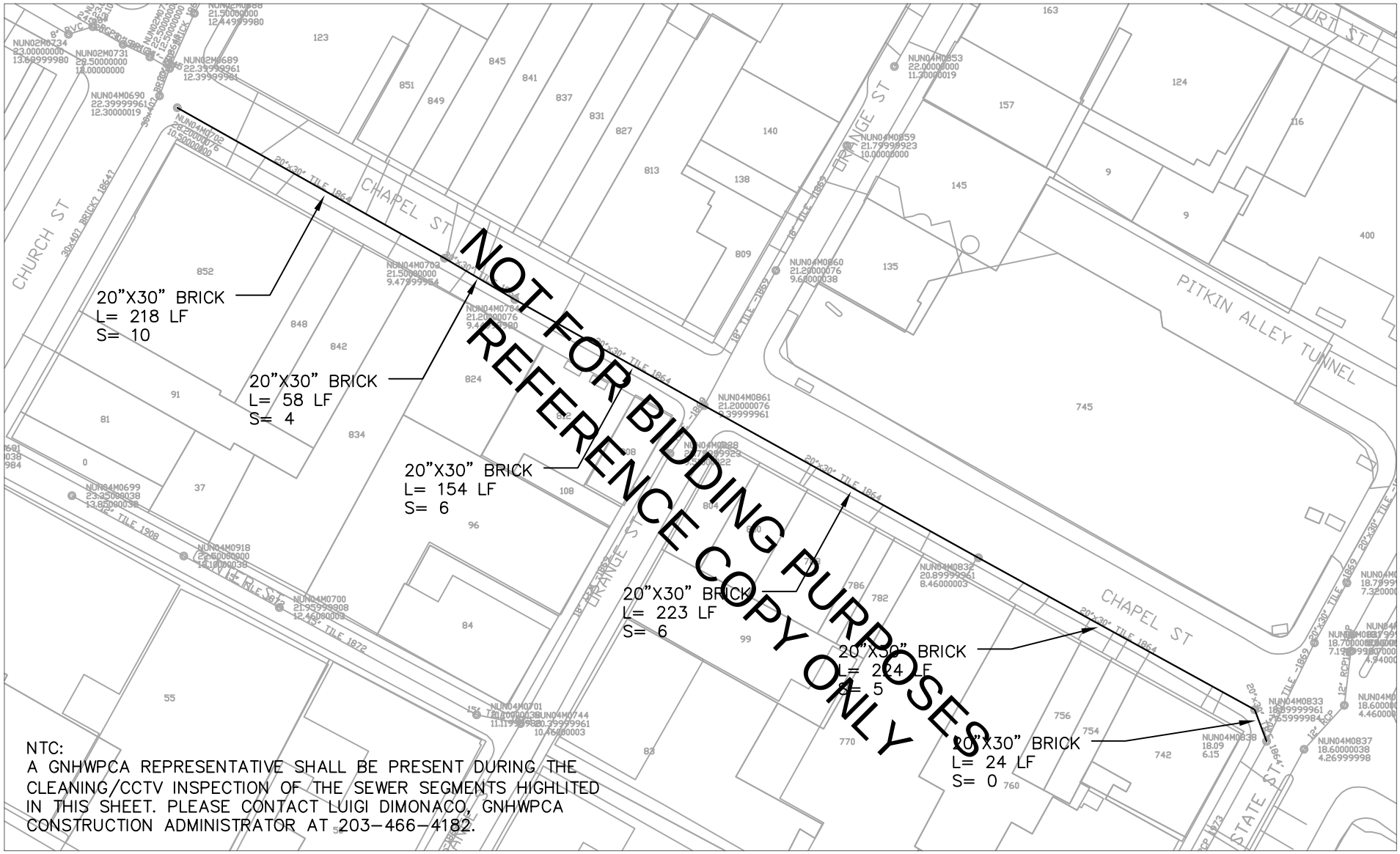
GNHWPCA
Protecting the Environment

Greater New Haven Water Pollution Control Authority
ENGINEERING DEPARTMENT
260 East Street
New Haven, CT 06511
(203) 466 5280 p (203) 722-1564 f

Drawn By: RC	Approved By: TS	Date: 1/25/2016

2016 COLLECTION SYSTEM ASSESSMENT AND REHABILITATION - CHAPEL STREET PROJECT

Project No.: SSR 2016-01	Sheet No.: 1 of



NTC:
A GNHWPCA REPRESENTATIVE SHALL BE PRESENT DURING THE CLEANING/CCTV INSPECTION OF THE SEWER SEGMENTS HIGHLITED IN THIS SHEET. PLEASE CONTACT LUIGI DIMONACO, GNHWPCA CONSTRUCTION ADMINISTRATOR AT 203-466-4182.

PLAN
1" = 100'

LEGEND

L= LINEAR FEET OF PIPE
S= No. OF SERVICE LATERALS PRESENT

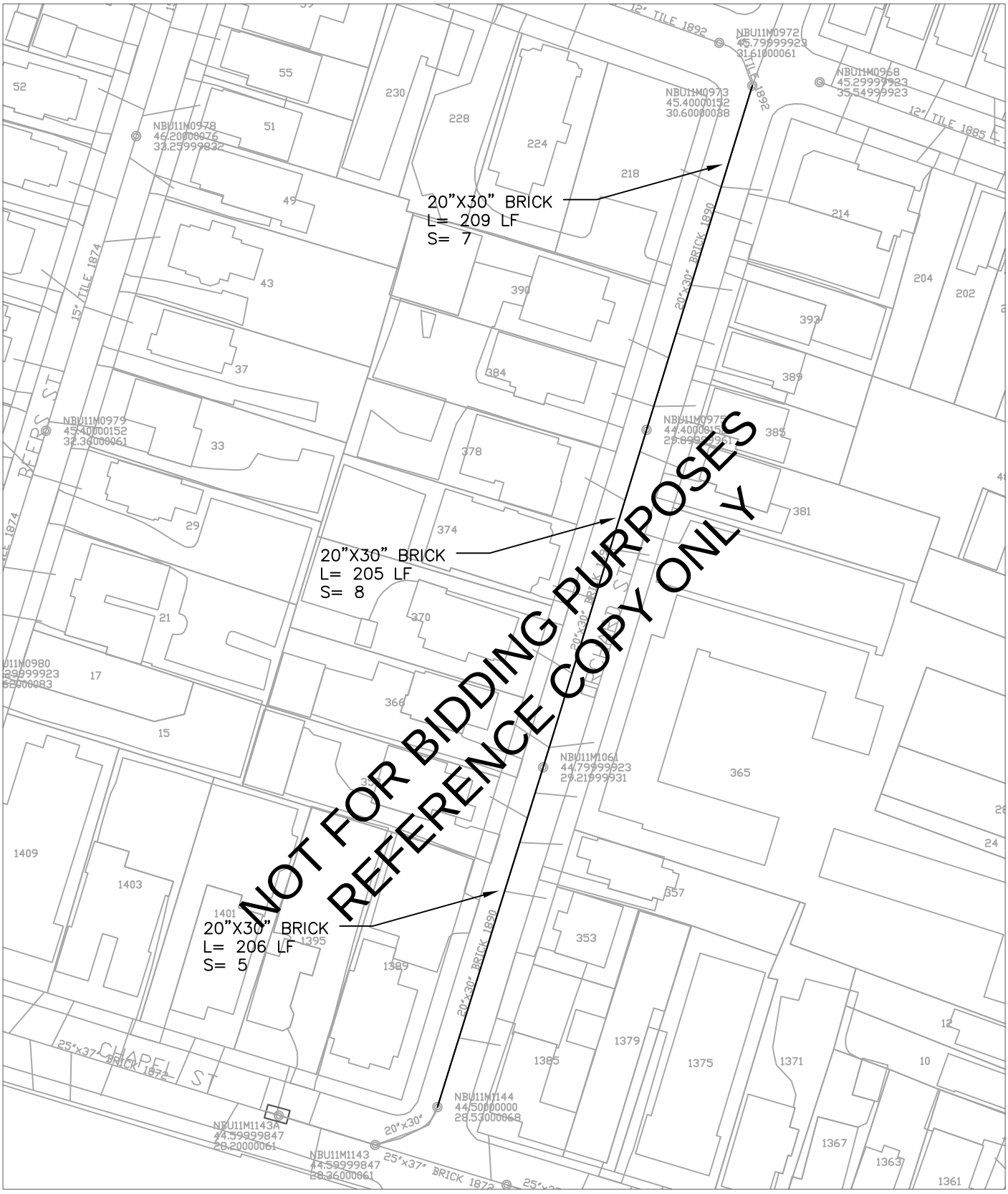
GNHWPCA
Protecting the Environment

Greater New Haven Water Pollution Control Authority
ENGINEERING DEPARTMENT
260 East Street
New Haven, CT 06511
(203) 466 5280 p (203) 722-1564 f

Drawn By: RC	Approved By: TS	Date: 1/25/2016

2016 COLLECTION SYSTEM
ASSESSMENT AND REHABILITATION -
CHAPEL STREET PROJECT

Project No.: SSR 2016-01	Sheet No.: 2 of



PLAN

1" = 80'

LEGEND

L= LINEAR FEET OF PIPE
S= No. OF SERVICE LATERALS PRESENT

GNHWPCA
Protecting the Environment

Greater New Haven Water Pollution Control Authority
ENGINEERING DEPARTMENT
260 East Street
New Haven, CT 06511
(203) 466 5280 p (203) 722-1564 f

Drawn By: RC	Approved By: TS	Date: 1/25/2016

2016 COLLECTION SYSTEM
ASSESSMENT AND REHABILITATION -
CHAPEL STREET PROJECT

Project No.: SSR 2016-01	Sheet No.: 3 of

PLAN

1" = 80'

LEGEND

L= LINEAR FEET OF PIPE
S= No. OF SERVICE LATERALS PRESENT

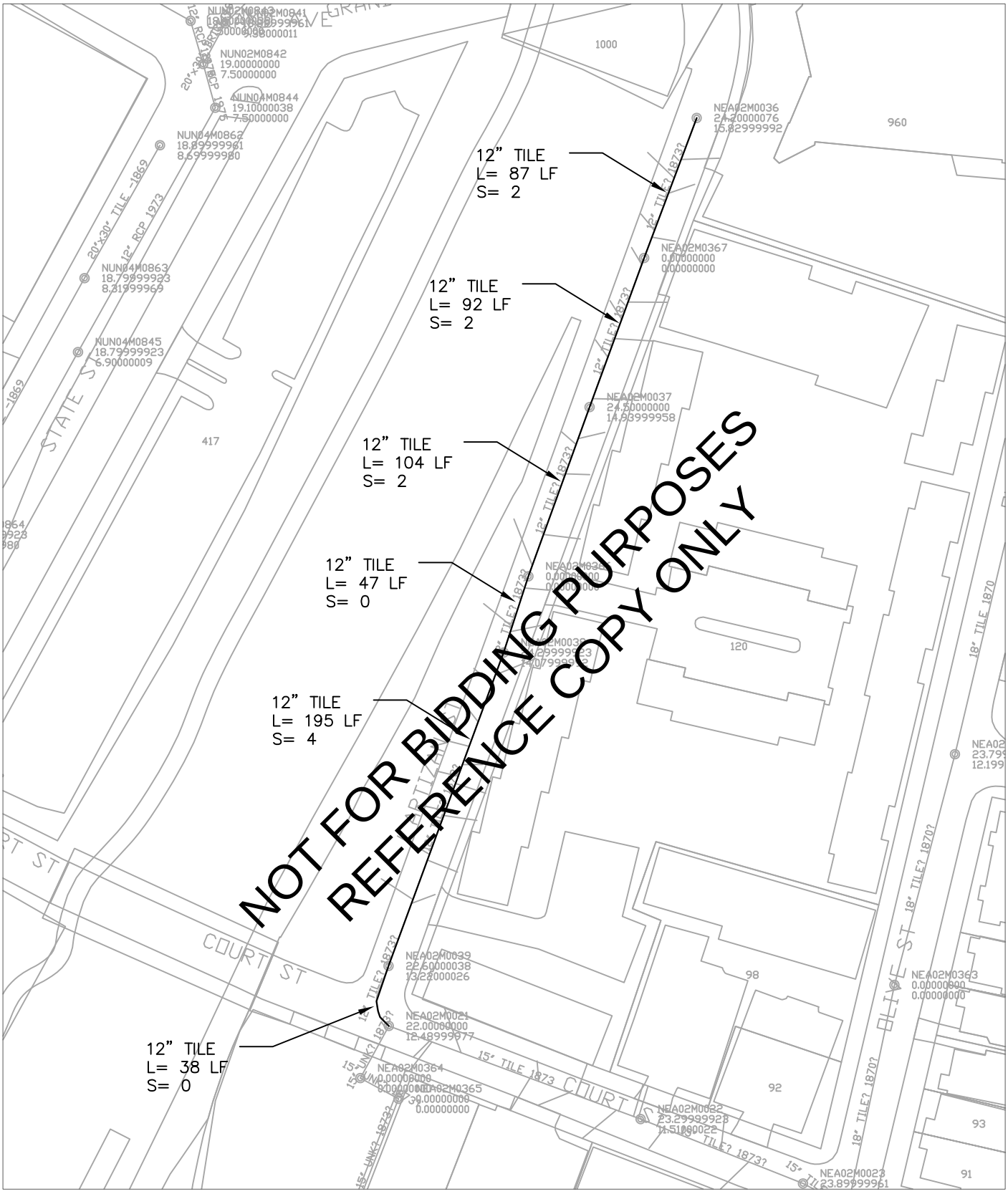
GNHWPCA
Protecting the Environment

Greater New Haven Water Pollution Control Authority
ENGINEERING DEPARTMENT
260 East Street
New Haven, CT 06511
(203) 466 5280 p (203) 722-1564 f

Drawn By: RC	Approved By: TS	Date: 1/25/2016

2016 COLLECTION SYSTEM
ASSESSMENT AND REHABILITATION -
CHAPEL STREET PROJECT

Project No.: SSR 2016-01	Sheet No.: 4 of



PLAN

1" = 80'

LEGEND

L= LINEAR FEET OF PIPE
S= No. OF SERVICE LATERALS PRESENT

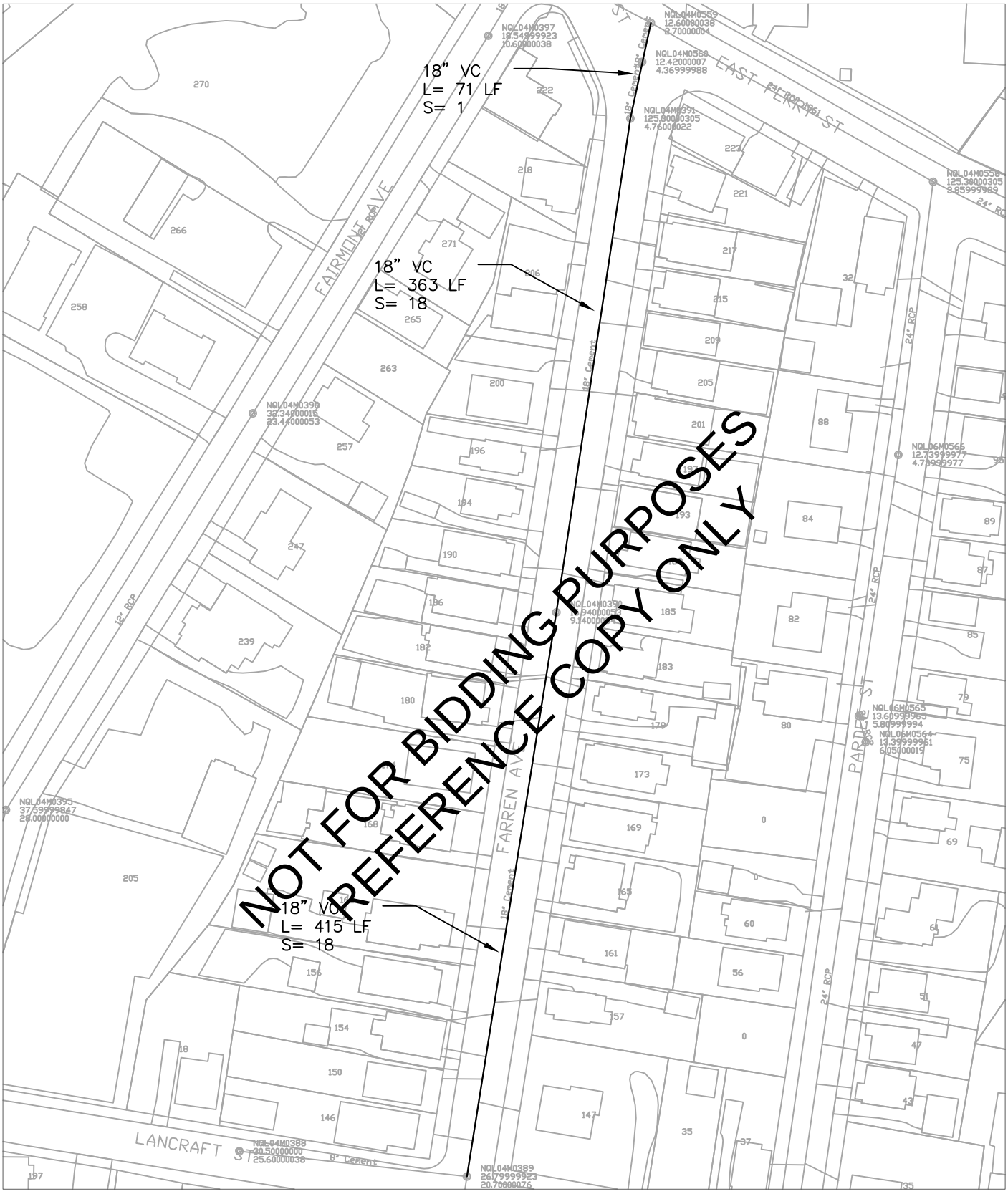
GNHWPCA
Protecting the Environment

Greater New Haven Water Pollution Control Authority
ENGINEERING DEPARTMENT
260 East Street
New Haven, CT 06511
(203) 466 5280 p (203) 722-1564 f

Drawn By: RC	Approved By: TS	Date: 1/25/2016

2016 COLLECTION SYSTEM
ASSESSMENT AND REHABILITATION -
CHAPEL STREET PROJECT

Project No.: SSR 2016-01	Sheet No.: 5 of



PLAN

1" = 100'

LEGEND

L= LINEAR FEET OF PIPE
S= No. OF SERVICE LATERALS PRESENT

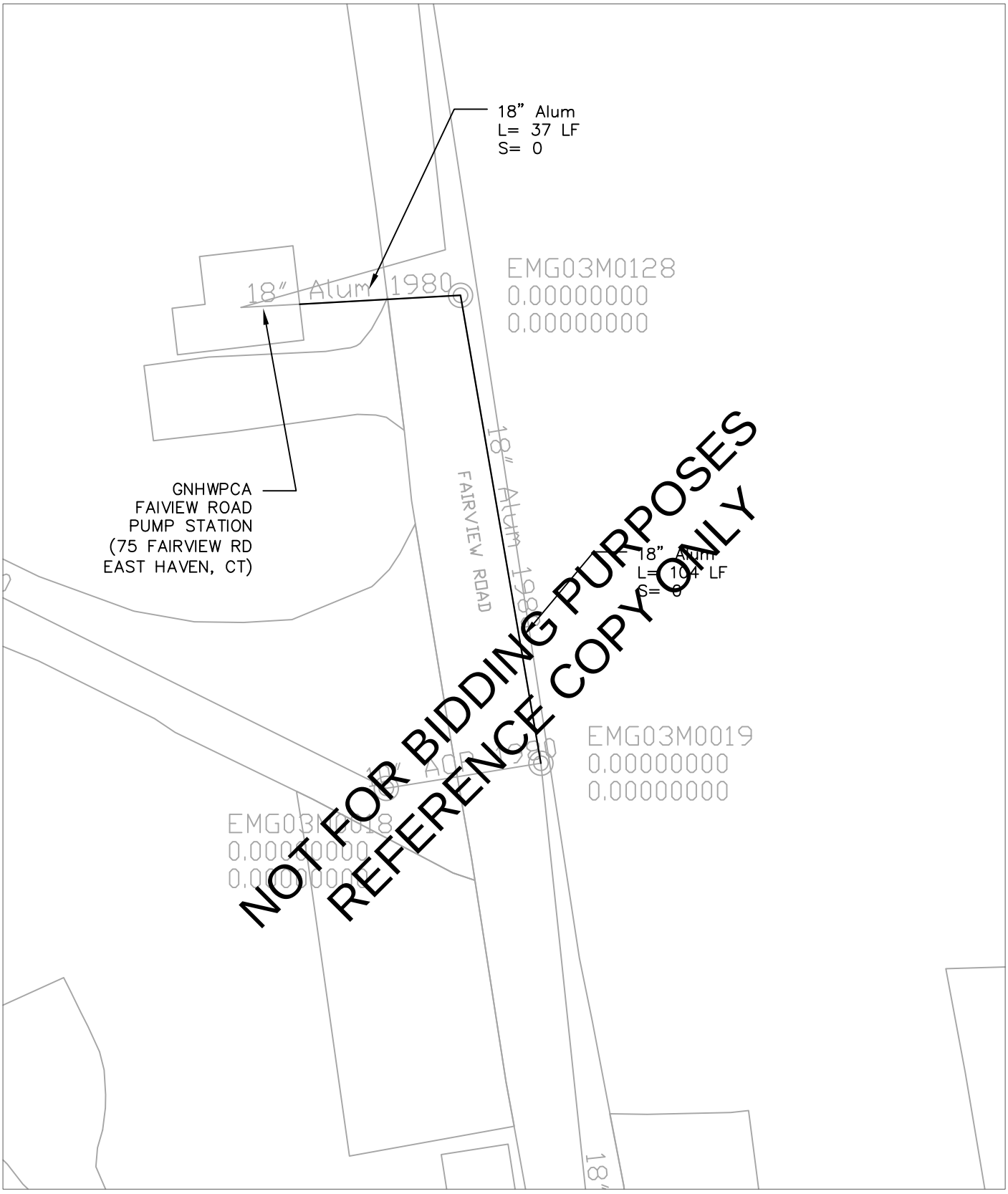
GNHWPCA
Protecting the Environment

Greater New Haven Water Pollution Control Authority
ENGINEERING DEPARTMENT
260 East Street
New Haven, CT 06511
(203) 466 5280 p (203) 722-1564 f

Drawn By: RC	Approved By: TS	Date: 1/25/2016

2016 COLLECTION SYSTEM
ASSESSMENT AND REHABILITATION -
CHAPEL STREET PROJECT

Project No.: SSR 2016-01	Sheet No.: 6 of



PLAN

1" = 30'

LEGEND

L= LINEAR FEET OF PIPE
S= No. OF SERVICE LATERALS PRESENT

GNHWPCA
Protecting the Environment

Greater New Haven Water Pollution Control Authority
ENGINEERING DEPARTMENT
260 East Street
New Haven, CT 06511
(203) 466 5280 p (203) 722-1564 f

Drawn By: RC	Approved By: TS	Date: 1/25/2016

2016 COLLECTION SYSTEM
ASSESSMENT AND REHABILITATION -
CHAPEL STREET PROJECT

Project No.: SSR 2016-01	Sheet No.: 7 of