

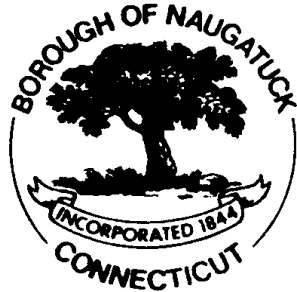
PROJECT MANUAL

SANITARY SEWER IMPROVEMENTS

BOROUGH OF NAUGATUCK, CONNECTICUT

November 2023

Contract No. FY24-B062



Designer:
Kleinfelder
400 Capital Blvd, Suite 104
Rocky Hill, CT, 06067



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Borough of Naugatuck

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REQUEST FOR BIDS

Sealed bids for the construction of the following project will be received by the Purchasing Agent for the Borough of Naugatuck, Accounting Dept. Basement, Town Hall, 229 Church Street, Connecticut, 06770 until January 11, 2024 at 10:00 AM local time after which no additional bids will be accepted. No exceptions.

**Contract No. FY24-B062
SANITARY SEWER IMPROVEMENTS**

Immediately following the above time and date sealed bids will be publicly opened and read aloud in the Hall of Burgesses, located on the 4th floor of Town Hall at the Borough of Naugatuck, 229 Church Street, Naugatuck, CT 06770 and read aloud via Zoom.

Join Zoom Meeting

<https://us06web.zoom.us/j/6782404415?pwd=eUZjRW5FdW5RT0lmQWk5anNsTkV3UT09>

Meeting ID: 678 240 4415

Passcode: 5fY9TT

One tap mobile

+19292056099,,6782404415#,,,,*486183# US (New York)

+16465189805,,6782404415#,,,,*486183# US (New York)

Dial by your location

+1 929 205 6099 US (New York)

+1 646 518 9805 US (New York)

Meeting ID: 678 240 4415

Passcode: 486183

Find your local number: <https://us06web.zoom.us/j/6782404415?pwd=eUZjRW5FdW5RT0lmQWk5anNsTkV3UT09>

The project consists of sanitary sewer improvements in various locations throughout the Borough of Naugatuck, CT. Improvements include, but is not limited to CCTV pipe inspection, cured-in-place pipe lining, sanitary sewer point repairs, sanitary manhole rehabilitation, and associated pavement repairs. All proposals must be in the form furnished with the Contract Documents.

The minimum rates to be paid labor of the various classifications shall be in accordance with the current schedule of wages established by the State Labor Commissioner as provided in the General Statutes of Connecticut, as revised. The Contract Wage Certification Form is to be submitted to the Labor Commissioner before the award of the contract.

The bid document may be examined and obtained at no cost from the Borough of Naugatuck web site <http://www.naugatuck-ct.gov>. All bidders must check the Borough web site within two (2) days of the scheduled bid opening to check for addenda. No hard copies shall be provided.

Bids must be accompanied by a certified check or Bid Bond in writing on forms provided by the Borough of Naugatuck in the amount of at least one tenth (10%) of the amount of the Bid and payable to the order of the Borough of Naugatuck. The successful Bidder will be required to furnish and pay for a Performance Bond and a Payment Bond in the amount of one hundred percent (100%) of the Contract price.

The right is reserved by the Borough of Naugatuck to reject any or all Bids, to waive any informalities or defects in Bids, and to make such time extensions as may be necessary in order to review and compare Bids, to obtain such supplemental information as may be necessary to review Bids and to accept Bid(s) that, in the judgment of the Borough of Naugatuck, will be in the Borough's best interest.

No Bidder may withdraw their bid within (90) days after the actual date of the opening thereof.

**AN AFFIRMATIVE ACTION/EQUAL OPPORTUNITY EMPLOYER MBE'S, WBE'S,
SBE'S AND SECTION 3 DESIGNATED ENTERPRISES ARE ENCOURAGED TO APPLY**

INFORMATION FOR BIDDERS

Borough of Naugatuck

DOWNTOWN SANITARY, STORMWATER, AND STREETScape IMPROVEMENTS NAUGATUCK, CT

1. Proposals Received

Sealed bids for the construction of the following project will be received by the Purchasing Agent for the Borough of Naugatuck, Accounting Dept. Lobby, Town Hall, 229 Church Street, Connecticut, 06770 until the date and time indicated on the Request for Bids after which no additional bids will be accepted.

2. Location and Description of Work

The project consists of sanitary sewer improvements in various location throughout the Borough of Naugatuck, CT. Rehabilitation includes, but is not limited to CCTV pipe inspections, CIPP lining, sanitary sewer points repairs, rehabilitation of sanitary manholes, and pavement repairs. Refer to Section 01063 for additional information.

3. Schedule of Construction and Time of Completion

The attention of the Bidder is called to the provisions Section 01063, Article 6 requiring submittal of a schedule of operations.

The attention of the Bidder is called to the requirements for commencement and progress of the work in SC-4 of the Supplemental Conditions for initiation and completion of the work.

The Bidder's attention is especially directed to Liquidated Damages, Section XXXII of the Contract and Agreement for information about failure to complete the project on time.

4. Plans and Project Manuals

The bid documents may be examined and obtained at no cost from the Borough of Naugatuck web site <http://www.naugatuck-ct.gov>. All bidders must check the Borough web site within two (2) days of the scheduled bid opening to check for addenda.

The construction contract will be entered into by the successful bidder and the Borough of Naugatuck. The specifications along with the contract drawings, contained herein will detail the general requirements for materials, methods of installation, measurement, and basis of payment to be required in this project.

Where insurance is required to be carried in the name of the Borough of Naugatuck and Kleinfelder, Inc. and the Borough of Naugatuck and Kleinfelder, Inc. shall be held harmless.

The bidder shall, therefore, be aware that the Borough of Naugatuck and its agents shall inspect and administrate this contract, make contract interpretations, determine the acceptability of the work and approve requests for payments. The Contractor shall be responsible for the requirements stated in specifications and in the construction drawings.

5. Addenda and Interpretations

No interpretations of the meaning of the contract documents will be made to any Bidder orally. Every request for such interpretation shall be in writing, addressed to James Stewart, Borough of Naugatuck Department of Public Works, 246 Rubber Avenue, Naugatuck, CT 06770 or emailed to JStewart@naugatuck-ct.gov. To be given consideration, such requests must be received at least seven (7) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the contract documents, which, if issued, will be posted to the Borough's internet page for all prospective Bidders, no later than four (4) days prior to the date fixed for the opening of bids. Failure of any Bidder to receive any such addendum or interpretations shall not relieve such Bidder from any obligation under the bid as submitted. All addenda so issued shall become part of the Contract Documents.

6. Familiarity of the Work

Each Bidder shall fully inform themselves prior to bidding as to existing conditions and limitations under which the work is to be performed and shall include in their bid a sum to cover the cost of items necessary to perform the work as set forth in the Contract Documents. No allowance will be made to a Bidder because of lack of such examination or knowledge. The submission of a bid will be considered as conclusive evidence that the Bidder has made such examination.

Where borings or other exploration data are shown on the Plans or made available to the Bidder, it is understood that such data were obtained in the usual manner, and with reasonable care, and are to be interpreted and used as the Bidder sees fit. There is no expressed or implied agreement that the depths or the character of the material and water levels have been correctly indicated, and the Bidder is cautioned to take into account that condition affecting the work may differ from those indicated.

The Owner assumes no responsibility whatsoever with respect to ascertaining for the Contractor such facts concerning physical characteristics at the site of the project.

The Contractor agrees that they shall make no claim for and has no right to additional payment or extension of time for completion of the work, or any other concessions, because of any interpretations or misunderstanding on their part of this Contract, or because of any failure on their part to fully acquaint themselves with all conditions relating to the work. Permission for making borings, test pits, or other investigations of subsurface conditions will be arranged for by the Owner upon receipt of a written request thereof.

7. Existing Conditions

In bidding on this Contract, each Bidder acknowledges that they have made whatever investigation of the project site they deemed necessary for the purpose of bidding.

8. Estimate of Work

For bidding purposes, the work has been subdivided into unit price items. The quantities shown below are to be considered as approximate only. The Borough of Naugatuck's Project Inspector (Inspector) does not expressly or by implication agree that the actual quantity(ies) will correspond therewith, but reserves the right to increase or decrease the amount of any Item or portion of the work as may be deemed necessary.

9. Qualification of Bidders

A Bidder shall be a contractor who is experienced in the construction of the projects of this type. The Proposal shall contain adequate proof of the qualifications of the Bidder to perform, in a satisfactory manner and within the time specified, all the work covered by the Plans and Project Manual. This proof shall be fully recorded on the pages titled "References", which shall become part of the Proposal.

10. Disqualification of Bidders

More than one proposal from an individual, firm, partnership, corporation, or an association under the same, or different, names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one proposal for the work contemplated will cause the rejection of all proposals in which such Bidder is interested. Any or all proposals in which such Bidder is interested will be rejected if there is reason for believing that collusion exists among the Bidders; and all participants in such collusion will not be considered in future proposals for the same work. Proposals in which the prices are obviously unbalanced may be rejected. No Contract will be awarded except to competent Bidders capable of performing the class or work contemplated.

11. Preparation of Proposals

The Proposal must be made upon the forms contained herein. The blank spaces in the Proposals must be filled in correctly where indicated. The Bidder must state, both in words and in numerals, written or printed in ink, the prices for which they propose to do each Item of the work contemplated. In case of discrepancy between the words and the numerals, the words shall govern. Ditto marks are not considered writing, or printing, and shall not be used. The Bidder shall sign the Proposal correctly. If an individual makes the Proposal, name and post office address must be shown. If made by a firm, partnership, or corporation, the Proposal must be signed by an official of the firm, partnership, or corporation authorized to sign contracts, and must show the post office address of the firm, partnership, or corporation.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the Bidder, this address, and name of the project for which the bid is submitted. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to:

Purchasing Office, Borough of Naugatuck, City Hall, 229 Church Street, Naugatuck, CT 06770.

12. Irregular Proposals

The Borough of Naugatuck reserves the right to reject any proposals if they show any omission, alteration of form, additions not called for, conditional bids, or irregularities of any kind.

13. Proposal Guarantee

No proposal will be considered unless accompanied by a certified check in U.S. dollars or bid bond using an insurance company licensed to do business in the State of Connecticut in an amount equal to at least one-tenth (10%) of the amount of the bid and payable to the order of the Borough of Naugatuck, said check or bid bond to be returned to the Bidder unless forfeited as hereinafter stipulated. Such checks or bid bonds will be returned to all bidders within five (5) days after the execution of the Contract and the furnishing of the required security by the successful Bidder.

14. Withdrawal of Proposals

If a Bidder wishes to withdraw their Proposal, they may do so before the time fixed for the opening of bids by communicating their purpose to the office of the Mayor. Upon such notice, the Proposal will be handed to themselves unopened.

15. Execution of Contract

The party to whom the Contract is awarded, or their authorized representative, will be required to attend at the office of the Mayor, Borough of Naugatuck, with the sureties offered by them, and a current certificate of Corporate good standing issued by the Office of the Secretary of State in which the corporation is incorporated, and execute the Contract within five (5) days from the date of the award. If the party entering into this contract is a corporation, a Corporate Resolution duly executed by the president and Secretary of the Corporation authorizing the Corporation to enter into this Contract shall be provided. In case of the failure or neglect to do so, the Owner may, at its opinion, determine that the Bidder has abandoned the Contract and thereupon the Proposal and acceptance shall be null and void, and bid security accompanying the Proposal shall be forfeited as liquidated damages to the Owner. If the party entering into this contract is a partnership, a partnership resolution duly executed by a majority of the general partners authorizing the partnership to enter into this contract shall be provided.

16. Bonds

The successful Bidder, at the time of the execution of the Contract, shall furnish a Performance Bond in an amount at least equal to one hundred percent (100%) of the Contract prices as security for the faithful performance of this Contract and also a Payment bond in an amount not less than one hundred percent (100%) for the Contract prices as security for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract. All Bonds shall be in the forms prescribed by Law or Regulation and be acceptable to the Owner. Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State of Connecticut. Bidder shall provide evidence that Surety Company is licensed to conduct business in the State of Connecticut. All sureties shall be in full force throughout the guarantee period and until the retainage is released.

17. Responsibility of the Contractor

Attention is hereby particularly directed to the provisions of the Contract and Specifications whereby the Contractor shall be responsible for any loss or damage that may happen in the work, or any part thereof, during its progress and also whereby the Contractor shall make good any defects for faults that may occur within one (1) year after date of final estimate. The Contractor shall indemnify and save harmless the Owner and Engineer from any damages or costs to which they may be put by reason of injury to the person or property of another resulting from negligence or carelessness in the performance of the work under this Contract.

18. Insurance

Before execution of the Contract, the Bidder will be required to file with the Borough of Naugatuck a certificate of insurance. The certificate, executed by an insurance company satisfactory to the Borough of Naugatuck shall name the Borough of Naugatuck and the Borough's Authorized Representatives as additional insured parties on the form furnished with these Contract Documents. The ACORD Certificate of Liability Insurance form is the industry accepted evidence of insurance and shall state that at a minimum, with respect to the contract, the bidder carries insurance in accordance with the requirements and stipulations listed below.

'The Contractor' shall indemnify, defend and hold harmless the Borough of Naugatuck, its officials, officers, employees, and designees caused in whole or in part to the fullest extent permitted by law from and against any and all claims, suits, actions, obligations, liabilities, damages, losses or injury (including the resulting death of a person), penalties, and expenses (including reasonable attorneys' fees) to the extent arising out of the performance of this Agreement or due to the Contractor's negligence or willful misconduct or omissions of the Contractor or its employees, agents, subcontractors or representatives.

Prior to the commencement of the work, and until final completion and acceptance of the work, the Contractor shall procure and maintain the following types of insurance and maintain all insurance coverage for the life of the contract, from an insurance company or companies with an

A.M. Best Rating of A- (IX) or better. Such insurance will protect and indemnify the Borough of Naugatuck from all claims which may arise out of or result from the Contractor's obligations under this agreement, whether caused by the contractor or by a subcontractor or any person or entity directly or indirectly employed by the Contractor or by anyone for whose acts said Contractor may be liable.

Refer to Borough of Naugatuck: Insurance Agreement within the Contract Forms section for insurance coverage amounts.

Prior to the issuing of any notice to proceed by the Borough of Naugatuck, the Contractor shall furnish the Borough of Naugatuck with Certificates of Insurance evidencing such insurance as set forth above. Said policies shall not be cancelled or permitted to lapse until final completion and approval of the performance of the work until ten (10) days after the Borough of Naugatuck has received written notice, by certified or registered mail, that the cancellation or change of such policy is contemplated.

The Contractor shall advise their insurers or agent of the contract provisions regarding insurance. The failure of the Contractor to notify insurers or agent of the contract provision shall not relieve the Contractor from its insurance obligations under the Agreement. Non-fulfillment of the insurance provisions shall constitute a breach of this agreement and the Borough of Naugatuck retains the right to stop work until proper evidence of insurance is provided.

19. Care and Protection of Property

The Contractor shall take particular care to avoid damages to all private property and to private improvements within the Boroughs' right of way. The Contractor shall make good any damages to the satisfaction of the Borough of Naugatuck Inspector. There shall be no additional compensation for the repair or restoration of private property, or private improvements within the Boroughs' right of way.

20. Sales Tax

Certain materials and supplies incorporated in the work of this project are exempt from Connecticut Sales Tax. The Bidder shall familiarize themselves with current regulations of the State Tax Department. The tax on materials or supplies exempted by such regulations shall not be included as part of the bid. The Owner will furnish the successful Bidder a sales tax exemption number.

21. Compliance with Federal and State Regulations

The Contractor shall be responsible for full compliance with any Federal and/or State laws, regulations and standards, as applicable to any project fully or partially funded by State and/or Federal funding agency. This project is funded, in part, by the State and Federal government.

22. Permits

All licenses and permits for complying with any applicable Federal, State, and Municipal laws, codes and regulations in connection with the prosecution of the work shall be obtained by the Contractor, at no additional cost to the Owner.

23. CHRO Contract Compliance Regulations

The contractor who is selected to perform this State project must comply with CONN. GEN. STAT. §§ 4a-60, 4a-60a, 4a-60g, and 46a-68b through 46a-68f, inclusive, as amended by June 2015 Special Session Public Act 15-5.

State law requires a minimum of twenty-five (25%) percent of the state-funded portion of the contract for award to subcontractors holding current certification from the Connecticut Department of Administrative Services (“DAS”) under the provisions of CONN. GEN. STAT. § 4a-60g. (25% of the work with DAS certified Small and Minority owned businesses and 25% of that work with DAS certified Minority, Women and/or Disabled owned businesses.) The contractor must demonstrate good faith effort to meet the 25% set-aside goals.

For municipal public works contracts and quasi-public agency projects, the contractor must file a written or electronic non-discrimination certification with the Commission on Human Rights and Opportunities. Forms can be found at:

http://www.ct.gov/opm/cwp/view.asp?a=2982&q=390928&opmNav_GID=1806

24. Sedimentation and Erosion Control Plan

The Contractor shall prepare a sedimentation and erosion control plan for the work.

25. Subcontractors

The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this contract must:

- A. Be acceptable to the Owner, and;
- B. Submit form entitled “Contractors Wage Certification Form”
- C. Submit form entitled “Non-Collusion Affidavit of Subcontractor”
- D. Submit form “Certificate of Compliance with Connecticut General Statute Section 31 – 57b”
- E. Submit form entitled “Nondiscrimination Certification”
- F. Comply with the Federal Requirements pertaining to “Sole Proprietor/Working Owners”

Approval of the proposed subcontract award cannot be given by the Owner unless and until the proposed Contractor has submitted the certification forms and/or other evidence showing that it has fully complied with any reporting and compliance requirements to which it is or was subject.

26. Contractor's Right to Terminate Work

If the work should be stopped under an order of any court or other public authority, for a consecutive period of not less than thirty (30) days, through no act or fault of the Contractor or of anyone employed by them, then the Contractor may terminate this Contract and recover from the Owner payment for all work executed.

27. Wage Rates

The Bidder's attention is directed to the appended wage rates and Section 01063, Paragraph 38.

28. Power of Attorney

Attorneys-in-fact who sign contract bonds must file, with each bond, a certified and effectively dated copy of their power of attorney.

29. Right to Reject

The Owner reserves the right to reject any or all proposals or to accept any bid, should it deem it to be in the best interest of the Owner.

30. Purchasing

All goods and services pertaining to work in this bid document shall commence with the vendors receipt of a Purchase Order from the Borough of Naugatuck.

Invoices must include the purchase order number and the charges listed in accordance with the purchase order. Invoices are to be delivered via email to accountspayable@naugatuck-ct.gov or as follows:

Borough of Naugatuck, Accounts Payable, 229 Church Street, Naugatuck, CT 06770

(a) Government contracts. Except as otherwise provided, each contracting agency shall include the following equal opportunity clause contained in section 202 of the order in each of its Government contracts (and modifications thereof if not included in the original contract): During the performance of this contract, the contractor agrees as follows: (1) The Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which they have a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(e) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to their books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's non-compliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(g) The Contractor will include the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: Provided, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

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PROPOSAL/BID FORM

SANITARY SEWER IMPROVEMENTS
NAUGATUCK, CT

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PROPOSAL/BID FORM

Borough of Naugatuck

SANITARY SEWER IMPROVEMENTS NAUGATUCK, CT

The undersigned, as Bidder, declares that no person or persons, other than those named herein, are interested in this Proposal; that this Proposal is made without collusion with any person, firm or corporation; that they have carefully examined the location of the proposed work, the proposed Form of Contract, and the Contract Drawings therein referred to; that no person or persons acting in any official capacity for the Owner is directly or indirectly interested therein or in any portion of the profit thereof; and that they propose and agree, if this Proposal is accepted, to execute the Form of Contract with the Owner; to provide all necessary equipment, tools, and other means of construction, and to do all work and furnish all materials specified in the Contract, in the manner and time therein prescribed, and according to the requirements of the Borough of Naugatuck Inspector as therein set forth, and that they will take in full payment therefore, the following unit prices and lump sums, to wit:

The Bidder acknowledges receipt of the following addenda:

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

Addendum No. _____ Dated: _____

The undersigned agrees that they shall execute the Contract within the ten (10) days after the date of award and shall commence work within the ten (10) days after date of the Notice to Proceed and shall progress therewith to its entire completion within the time stipulated in the Contract.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of ninety (90) days after the scheduled closing time for receiving bids.

If this Proposal shall be accepted by the Owner and the undersigned fails to contract as aforesaid, and to give bonds in a sum equal to one hundred percent (100%) of the Contract price, as determined by the canvass of bids, and with surety or sureties satisfactory to the Owner within

ten (10) days from the date of the award, then the Owner may, at its option, determine that the Bidder has abandoned the Contract: thereupon, the Proposal and acceptance shall be null and void, and the bid security, for not less than one-tenth (10%) of the amount of the bid, accompanying this Proposal, shall become the property of the said Owner as liquidated damages for the delay and additional expense to the Owner caused thereby if said Proposal shall be rejected, or if said Proposal shall be accepted and the Bidder shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Proposal) and shall furnish a Bond for the faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Proposal, the accompanying bid security shall be returned to the undersigned making bid.

Seal
(if bid is by a Corporation)

Firm or Corporation _____

By: _____
(Duly Authorized)

Street Address _____

City _____ State _____ Zip _____

Telephone _____

Email _____

Date

Fax _____

**PROPOSAL FORM - BID SCHEDULE
 SANITARY SEWER IMPROVEMENTS
 PROJECT NO. FY 23-B062
 BOROUGH OF NAUGATUCK, CONNECTICUT**

BIDDER'S NAME: _____

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
1	1	L.S.	EROSION AND SEDIMENT CONTROL		
			_____ dollars and _____ cents per lump sum	\$	\$
2	5	C.Y.	*EXPLORATORY EXCAVATION (TEST PITS)		
			_____ dollars and _____ cents per cubic yard	\$	\$
3	1,000	L.F.	*INVESTIGATIVE CCTV SANITARY SEWER INSPECTION (AS DIRECTED)		
			_____ dollars and _____ cents per linear foot	\$	\$
4	275	L.F.	*CURED-IN-PLACE PIPE LINING (6-INCH SANITARY SEWER)		
			_____ dollars and _____ cents per linear foot	\$	\$
5	1,000	L.F.	*CURED-IN-PLACE PIPE LINING (8-INCH SANITARY SEWER)		
			_____ dollars and _____ cents per linear foot	\$	\$
6	1000	L.F.	*CURED-IN-PLACE PIPE LINING (10-INCH SANITARY SEWER)		
			_____ dollars and _____ cents per linear foot	\$	\$
7	275	L.F.	*CURED-IN-PLACE PIPE LINING (12-INCH SANITARY SEWER)		
			_____ dollars and _____ cents per linear foot	\$	\$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
8	50	L.F.	*SANITARY SEWER EXCAVATED POINT REPAIR (AS DIRECTED)		
			_____ dollars and _____ cents per linear foot	\$	\$
9	300	L.F.	*HEAVY CLEANING OF SANITARY SEWER LINES 6"-15" (AS DIRECTED)		
			_____ dollars and _____ cents per linear foot	\$	\$
10	7	EA.	REPLACE MANHOLE FRAME AND COVER (SANITARY SEWER)		
			_____ dollars and _____ cents per each	\$	\$
11	200	V.F.	CEMENTITIOUS LINING OF MANHOLE CORBEL, WALLS, & BASE		
			_____ dollars and _____ cents per vertical foot	\$	\$
12	5	EA.	SEAL MANHOLE CHIMNEY		
			_____ dollars and _____ cents per each	\$	\$
13	2	EA.	REBUILD MANHOLE RISER		
			_____ dollars and _____ cents per each	\$	\$
14	1	EA.	REPAIR OR REBUILD MANHOLE BRICK TABLE & INVERTS		
			_____ dollars and _____ cents per each	\$	\$

ITEM	EST. QTY.	UNITS	DESCRIPTION AND WRITTEN UNIT PRICE	UNIT PRICE	AMOUNT
15	1	ALL.	RAISE MANHOLE TO GRADE		
			THIRTY THOUSAND DOLLARS AND NO CENTS ALLOWANCE	\$ 30,000.00	\$ 30,000.00
16	10	TN	*ADDITIONAL PERMANENT PAVEMENT REPAIR (AS DIRECTED)		
			_____ dollars and _____ cents per square yards	\$	\$
17	250	C.Y.	*GRAVEL BORROW (AS DIRECTED)		
			_____ dollars and _____ cents per cubic yard	\$	\$
18	10	C.Y.	*REMOVAL OF UNSUITABLE MATERIAL BELOW BEDDING (AS DIRECTED)		
			_____ dollars and _____ cents per cubic yard	\$	\$
19	1	L.S.	MOBILIZATION & DEMOBILIZATION		
			_____ dollars and _____ cents per lump sum	\$	\$
20	1	L.S.	MAINTENANCE & PROTECTION OF TRAFFIC		
			_____ dollars and _____ cents per lump sum	\$	\$
21	1	ALL.	UNIFORMED POLICE FOR TRAFFIC CONTROL (BOROUGH POLICE)		
			TWENTY FIVE THOUSAND DOLLARS AND NO CENTS	\$25,000.00	\$25,000.00
PROJECT TOTAL (in words)					
_____ dollars and _____ cents				\$	\$

*Quantities are estimated for comparison of bids only. Quantities are not guaranteed. Payment will be based on actual quantities installed / constructed and approved by the Engineer.

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"Unit Price" amounts are to be shown in both words and figures. In case of discrepancy, the amount shown in words will govern. In case of discrepancy between "Unit Price" and "Total Amount", the unit price will govern.

Item quantities are not guaranteed. Actual quantities to be measured and paid for based on actual quantities provided. As Directed items shall only be paid for directed and approved by the Borough's Inspector.

The award of the Contract will be made to the lowest responsible bidder. By submission of the Bid, each bidder certifies that their bid has been arrived at independently, without consultation, communication, or agreement as to any matter related to this Bid and with any other Bidder or competitor.

Signature _____

Date _____

Print Name _____

Tel _____

Corporation Name _____

Fax _____

Address _____

E-mail _____

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REFERENCES

The Bidder is required to fill out the following form to enable the Owner to make inquiries and judge as to the Bidder's experience, skill, available financial resources, credit, and business standing.

1. Number of years the bidder has been in business as a General Contractor: _____

2. List three (3) projects of similar nature to the project described herein that the Bidder has completed within the last 10 years, with name, address, and telephone number of a reference for each project. Include approximate construction cost:

3. List projects presently under construction by the Bidder, dollar amount of the contract, and percent completed:

4. Has the Bidder ever failed to complete work awarded; and if so, state where and why:

5. Does the Bidder plan to sublet any part of this work; and if so, give details:

6. List equipment Bidder owns that is available for this project:

7. List equipment the Bidder plans to rent or purchase for this project:

8. If the Bidder has worked under the direction of the Borough of Naugatuck or its Consulting Engineer, list recent projects with the name, address, and telephone number of the Consultant:

9. List name, address, and telephone number for the following:

Surety: _____

Bank: _____

Major Material Supplier: _____

Bidder _____

BID BOND

KNOW ALL PERSONS BY THESE PRESENTS, that we, the undersigned, _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto _____ as OWNER in the penal sum of

_____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 2023.

The Condition of the above obligation is such that whereas the Principal has submitted to _____ a certain BID, attached hereto and hereby made a part hereof to enter into a contract in writing, for the Downtown Sanitary, Stormwater, and Streetscape Improvements.

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for the faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of the time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

Principal (L.S.)

Surety

By: _____

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

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CONTRACT FORMS

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CONTRACT AND AGREEMENT

THIS AGREEMENT, for Sanitary Sewer Rehabilitation, Naugatuck, CT made this _____ day of _____ in the year 20___, between the Borough of Naugatuck, with its principal office and place of business at 229 Church Street, Connecticut 06770, acting herein through it's Mayor and _____, a _____, with an office and place of business at _____, hereinafter called the contractor.

WITNESSETH: That the parties to this agreement in consideration of the undertakings, promises, and agreements on the part of the other herein contained, hereby undertake, promise, and agree as follows:

I Definitions

The word "Owner" as used herein shall mean the Borough of Naugatuck, acting through its properly authorized representatives.

The words "as directed", "as required", "as permitted", "as allowed", or phrases of like effect or import, used herein shall mean that the direction, requirement, permission, or allowance of the Borough of Naugatuck Inspector is intended and similarly the words "approved", "reasonable", "suitable", "proper", "satisfactory", or words of like effect or import, unless otherwise particular specified herein, shall mean approved, reasonable, suitable, proper, or satisfactory in the judgment of the Borough of Naugatuck Inspector.

The word "Contractor" shall mean _____ or it's duly authorized agents.

II Contract Includes

The indices, headings and subheadings are for convenience only and do not form a part of the Contract Documents.

The Contractor shall, at their own sole cost and expense, furnish all labor, materials, and other services necessary for the completion of this Contract and shall complete and finish the same in the most thorough, workmanlike, and substantial manner, in every respect, to the satisfaction and approval of the Borough of Naugatuck Inspector, in the manner and within the time hereinafter limited, and in strict accordance with the Advertisement, Information for Bidders, Proposal, Contract Forms, General Requirements, Supplemental Specifications, Standard Specifications, Special Provisions and Addenda hereto attached, and the Contract Drawings herein referred to, (collectively the "contract documents"), which contract documents are hereby made a part of this Contract as fully as if the same were repeated at length herein.

Addendum No. ___ Dated: _____ Addendum No. ___ Dated: _____

Addendum No. ___ Dated: _____ Addendum No. ___ Dated: _____

Addendum No. ____ Dated: _____ Addendum No. ____ Dated: _____

III Specifications and Contract Drawings Supplementary

The said standard and supplemental specifications, special provisions and Contract Drawings are intended to supplement each other, and together constitute one complete set of Contract Documents, so that any work exhibited in the one and not in the other shall be executed just as if it had been set forth in both, in order that the work shall be completed in every respect according to the complete design or designs as decided and determined by the Borough of Naugatuck Inspector. Should anything be omitted from the Specifications and Contract Drawings, the Contractor shall promptly notify the Borough of Naugatuck Inspector. From time to time during the progress of the work, the Borough of Naugatuck Inspector will furnish such supplementary or working drawings as are necessary to show changes or define the work in more detail, and these also shall be considered as Contract Drawings.

IV Modifications

The Contractor, in entering into this Contract, understands that the Owner reserves the right to modify, to the extent herein provided, the arrangement, character, grade, or size of the work or appurtenances whenever, in the Owner's opinion, it shall be deemed necessary or advisable to do so. Minor changes in the work, not involving extra cost and consistent with the purposes of the work, may be made by verbal order, but no modifications involving extra work or material changes shall be made unless ordered in writing by the Borough of Naugatuck Inspector; and if the modification requires additional cost, a purchase order must be issued prior to work commencing. The Contractor shall and will accept such modifications when ordered in writing by the Owner through the Borough of Naugatuck Inspector, and the same shall not vitiate or void this Contract.

Any such modifications so made shall not, however, subject the Contractor to increased expense without equitable compensation, which shall be determined by the Borough of Naugatuck Inspector. If such modifications result in a decrease in the cost of work involved, and equitable deduction from the Contract price, to be determined by the Borough of Naugatuck Inspector, shall be made. The Borough of Naugatuck Inspector's determination of such additional compensation, or of any such deduction, shall be based upon the unit prices in the Contractor's bid, unless the modification involves work not included in such bids and then in the event, the modification shall be as set forth in Section XXVIII prior to the commencement of additional work. In no event shall any modification in the work shown on the Plans and Specifications be made unless the nature and extent thereof has first been certified by the Borough of Naugatuck Inspector in writing and sent to the Contractor.

V Correction of Errors and Omissions

The Plans, Standards and Specifications and Special Provisions forming part of this Contract are intended to be explanatory of each other, but should any discrepancy appear, or misunderstanding arise, as to the import of anything contained in either, the explanation and decision of the Borough of Naugatuck Inspector shall be final and binding on the Contractor; and all directions and explanations required, to complete and make effective any of the provisions of the Contract and Specifications, shall be given by the Borough of Naugatuck Inspector. Corrections of errors and omissions in the Drawings, Standard or Special Provisions may be made by the Borough of Naugatuck Inspector when such corrections are necessary for the proper fulfillment of the Contract Documents as construed by the Borough of Naugatuck Inspector. The effect of such corrections shall date from the time that the Borough of Naugatuck Inspector gives due notice thereof to the Contractor.

VI Borough of Naugatuck Inspector's Decision

All work under this Contract shall be done to the satisfaction of the Borough of Naugatuck Inspector, who shall determine the amount, quality, acceptability, and fitness of the several items of work and materials which are to be paid for hereunder. The Inspector shall also decide all questions which may arise as to the fulfillment of the terms of the Contract Documents. The determination of the Borough of Naugatuck Inspector in all such matters shall be final and binding upon the parties thereto.

VII Inspection of Work

It is agreed that the Owner may, at its pleasure, appoint and employ, at its own expense, such persons as may be necessary, who are to act as Borough of Naugatuck Inspectors, inspections, or agents, for the purpose of determining, in the Borough's interest, that the materials furnished and the work done, as the work progresses, conforms to the requirements of the Contract Documents. Such persons shall have unrestricted access to all parts of the work and to other places at and where the preparation of the materials and other parts of the work to be done under this Contract are carried on and conducted. They shall be given, by the Contractor, all facilities and assistance required to carry out their work of inspection.

It is not the function of the Borough of Naugatuck Inspector to supervise or direct the manner in which the work to be done under this Contract is carried on or conducted. The Borough of Naugatuck Inspector is not responsible for construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the work, and will not be responsible for the Contractor's failure to carry out the work in accordance with the Contract Documents.

The Borough of Naugatuck Inspector shall have authority to reject and shall reject any work or material, or any part thereof, which does not, in their opinion, conform to the Contract Drawings, working drawings, Standard Specifications, Special Provisions and Contract, and it shall be permissible for them to do so at any time during the progress of the work.

No work shall be done except in the presence of the Borough of Naugatuck Inspector or Inspector's assistants. No material of any kind shall be used upon the work until it has been inspected and accepted by the Borough of Naugatuck Inspector. Any materials or workmanship found at any time to be defective, or not of the quality or character required by the Contract Drawings, Standard Specifications and Special Provisions shall be remedied at once regardless of previous inspection.

Such inspection shall not relieve the Contractor from any obligation to perform said work strictly in accordance with the Contract Drawings and Project Manual and work not so constructed shall be removed and made good by the Contractor at this own expense and free of all expense to the Owner, whenever so ordered by the Owner, without reference to any previous oversight or error in inspection.

VIII Address of Contractor

The address in the Proposal, upon which this Contract is based, shall be the Contractor's place of business as set forth in this agreement. The delivering at the above-named place any such notice, letter, or other communication to the Contractor shall be deemed proper service to the Contractor. The notice letter or other communication may be mailed or delivered, from the Borough to the Contractor. The date of said service shall be the date of such delivery. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter, or other communication upon the Contractor or their representative personally.

IX Obligation of the Contractor

The Contractor shall, at their own expense, provide any and all manner of supervisor, insurance, taxes, labor, materials, apparatus, scaffolding, appliances, tools, machinery, power, transportation, and whatever else may be required of every description necessary to do and complete the work and shall be solely answerable for the same and for the safe, proper, and lawful construction, maintenance, and use thereof. The Contractor shall cover and protect the work from damage and shall make good all injury to the same occurring before completion of this Contract. The Contractor shall employ only competent workmen and shall provide experienced superintendents and foremen on each part of the work.

The Contractor shall, at their own expense, wherever necessary or required, maintain fences, provide watchmen, maintain lights, place additional timber and braces, and take such other precautions as may be necessary to protect life, property, and structures, vehicles and pedestrians and shall be liable for all damages, occasioned in any way by their act or neglect or that of this agent, employees, or workmen. The Contractor shall provide access at all times to private property.

X Occupational Safety and Health Act

The applicable sections of the Occupational Safety and Health Act of 1970 (Williams-Steiger Act) shall apply and be made a part of this Contract. The Contractor's attention is particularly directed to the record keeping requirements of this Act.

XI Nondiscrimination in Employment

The Contractor agrees and warrants that, in the performance of this Contract, they will not discriminate or permit discrimination against any person or group of persons on the grounds of race, color, sex, religion, or national origin in any manner prohibited by State, Federal, County or Municipal law.

XII Personal Attention and Competent Workmen

The Contractor shall give their personal attention constantly to the faithful prosecution of the work and shall be present, either in person or by a duly authorized representative, on the site of the work continually during its progress to receive directions or instructions from the Borough of Naugatuck Inspector. The Contractor shall employ at the site, during the performance of the work, a competent superintendent or foreman who shall be satisfactory to the Borough of Naugatuck Inspector and who shall not be changed, except with the consent of the Borough of Naugatuck Inspector, unless they cease to be an employee of the Contractor. Such superintendent or foreman shall represent and have full authority to act for the Contractor in their absence, and all directions and instructions given such superintendent or foreman shall be as binding as if given to the Contractor.

The Contractor shall employ only competent, skillful persons to do the work, and whenever the Borough of Naugatuck Inspector shall notify the Contractor in writing that any person on the work is, in their opinion, incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such person shall be discharged from the work and shall not again be employed on it, except with the consent of the Borough of Naugatuck Inspector.

XIII Public Safeguards

The Contractor agrees to conduct the work at all times in such a manner that public travel shall not be inconvenienced needlessly nor shall it be wholly obstructed at any point.

XIV Materials and Workmanship

It is the intent of the Specifications to describe fully and definitely the character of materials and workmanship furnished regarding all ordinary features and to require first-class work and materials in all particulars. For any unexpected features arising during the progress of the work and not fully covered herein, the Specifications shall be interpreted by the Borough of Naugatuck Inspector to require first class work and materials in all respects, and such interpretation shall be accepted by the Contractor.

XV Materials and Manufactured Articles

All materials and workmanship shall be subject to the approval of the Borough of Naugatuck Inspector and shall be in conformity with approved modern practice.

Unless otherwise specifically provided for in the Project Manual, all materials incorporated in the work shall be new, of standard and first-class quality, and of the best workmanship and design. No inferior or low grade, material will be either approved or accepted, and all work of assembly and construction must be done in a neat, first-class, and workmanlike manner.

XVI Unnoticed Defects

The inspection of the work and materials by the Borough of Naugatuck Inspector shall not relieve the Contractor of any of their obligations to fulfill this Contract, as herein described, and defective work shall be made good and unsuitable materials shall be rejected, notwithstanding that such work and materials had been previously overlooked by the Borough of Naugatuck Inspector and accepted or estimated for payment. If the work, or any part thereof, shall be found defective at any time before final acceptance of the whole work, the Contractor shall forthwith make good such defects, in a manner satisfactory to the Borough of Naugatuck Inspector.

XVII Care and Protection of Work

From the commencement of the work until the completion of the same, the Contractor shall be solely responsible for the care of the work covered by the Contract and for the materials delivered at the site intended to be used in the work; and all injury, damage, or loss of the same, from whatever cause, shall be made good at their expense before the final estimate is made. The Contractor shall provide suitable means of protection for all materials intended to be used in the work and for all work in progress as well as for completed work. The Contractor shall take all necessary precautions to prevent injury or damage to the work under construction by flood, freezing or inclement weather at any and all times. The methods used for this purpose shall be subject to the approval of the Borough of Naugatuck Inspector but shall not relieve the Contractor from liability for inadequate protection of the work or materials.

XVIII Assignment of Contract

The Contractor shall have no right or power to assign this Contract, in whole or in part, nor to assign any right arising, or moneys due or to grow due thereunder, without prior written approval of the Owner.

XIX Subcontracting

The Contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors. The Contractor shall not award the work to a subcontractor(s) without prior written approval of the Owner. The Contractor shall be fully responsible to the Owner for the acts and omissions of their subcontractors, and of persons either directly or indirectly employed by them, as they are for the acts and omissions of persons directly employed by them.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the Contractor by the terms of these Contract Documents, insofar as applicable to the work of subcontractors, and to give the Contractor the same power as regards

terminating any subcontract that the Owner may exercise over the Contractor under any provisions of these Contract Documents.

Nothing contained in this contract shall create any contractual relation between any subcontractor and the Owner.

XX Liability of Contractor for Employees

Each and every employee of the Contractor and each and every of their subcontractors engaged in the said work shall, for all purposes, be deemed and taken to be the exclusive servants of the Contractor and not for any purpose or in any manner in the employment of the Owner. The Contractor shall, in no manner, be relieved from responsibility or liability on account of any fault or delay in the execution of the said work, or any part thereof, by any such employee, or any such subcontractor, or any material persons, whatsoever.

XXI Coordination With Other Contractors and Utilities

During the progress of the work, existing utilities may be found to be in close proximity to or in conflict with the work being installed. The Contractor shall make every effort to identify and locate these utilities before working in the area. If it is known or found that these utilities exist the Contractor shall contact the appropriate utility and alert them to the situation. Should an existing utility be found to be in close proximity to the work the Contractor shall take all the necessary precautions to protect the utilities and their work. Should existing utilities be found to conflict with the work the Contractor shall arrange with the utility company for their adjustment. No additional compensation will be made for delays, inconvenience or damage sustained by the Contractor due to interference from the above-noted utility appurtenances or the operation of locating, installing or moving them or the inability of others to perform their work in a timely manner.

XXII Permits, Laws, Codes, Ordinances and Insurance

The Contractor shall keep themselves fully informed of all existing and current codes, ordinances, and regulations and Municipal, County, State or National laws in any way limiting or controlling the actions or operations of those engaged upon the work or affecting the materials supplied to or by them. The Contractor shall, at all times, observe and comply with all such valid and legally binding ordinances, laws, and regulations and shall protect and indemnify the Owner and its representatives and agents against any claim or liability arising from, or based on, any violation of the same. The Contractor shall obtain and pay for all necessary permits and pay all fees required in connection with the Contract. Contractor shall provide the types and amounts of insurance as set forth in Section 18, Information of Bidders and maintain in effect. The Contractor shall take out and carry appropriate employer's liability insurance and public liability insurance.

XXIII Patent Rights

The Contractor shall indemnify and save harmless the Owner and its officers, agents, and

representatives from all claims for damages arising from the infringements, or alleged infringements, of any Letters Patent or patent rights covering any material, appliance, or device used in or upon the work or any part thereof.

All royalties for patents or patent infringement claims, that might be involved in the construction or use of the work, shall be included in the Contract amount; and the Contractor shall satisfy all demands that may be made at any time for such and shall be liable for any damage or claims for patent infringements; and the Contractor shall, at their own expense, defend any and all suits or proceedings that may be instituted against the Owner for infringement, or alleged infringement, of any patent or patents involved, or alleged to be involved, in the work; and in case of any award for damages, the said Contractor shall pay such award.

XXIV Defense of Suits

The Contractor shall indemnify and hold harmless the Owner and its consultants, agents and employees from and against all claims, damages, losses, and expenses, including, but not limited to, attorney fees, ("indemnification expense") arising out of or resulting from the performance of the work or arising out of or resulting from the Contract Documents, including, without limitation, all indemnification expense regarding personal injury or death and/or damage to real or personal property or motor vehicles.

In claims against any person or entity indemnified under this section by an employee or the Contractor, a Subcontractor, anyone directly or indirectly employed by them or anyone for whose acts they may be liable, the indemnification obligation under this Section shall not be limited by a limitation on amount or type of damages, compensation or benefits payable by or for the Contractor or a Subcontractor under worker's or workmen's compensation acts, disability benefit acts or other employee benefit acts.

XXV Claims for Labor and Materials

The Contractor shall indemnify and save harmless the Owner from all claims expenses and for judgments regarding labor done or materials furnished under this Contract, or any alterations or modifications thereof, including without limitation, reasonable Attorney's fees. Contractor shall furnish the Owner with a Mechanic's Lien Waiver from all persons who have done work, or furnished materials under this Contract. In case such waiver is not furnished, an amount necessary or sufficient, within the discretion of the Owner, to meet the claims of the persons aforesaid, shall be retained, as herein specified, from the money due the Contractor under this Contract until the liabilities aforesaid shall be fully discharged or satisfactorily secured.

XXVI Completion of Work by Owner

If the work to be done under this Contract shall be abandoned by the Contractor; or if this Contract shall be assigned, or the work sublet by them, otherwise than as herein specified; or if at any time the Owner shall be of the opinion that the performance of the Contract is unnecessarily or unreasonably delayed; or if the Contractor is willfully violating any of the conditions or covenants of this Contract, or of the Specifications, or is executing the same in bad faith or not in

accordance with the terms thereof; of if the work be not fully completed within the time named in this Contract for its completion, or within the time to which the completion of the Contract may be extended by the Owner, the Owner may notify the Contractor to discontinue all work, or any part thereof under the Contract, by a written notice to be served upon the Contractor as herein provided.

The Contractor shall, within five (5) days of the service of said written notice, discontinue the work, or such part thereof, and the Owner shall thereupon have the power to contract for the completion of the Contract, in the manner prescribed by law; or to place such and so many persons as it may be deemed advisable, by contract or otherwise, to work, and complete the work herein described, or such part thereof; or to take possession of and use any of the materials, plant, tools, equipment, supplies, and property of every kind provided by the Contractor for the purpose of their work; and to procure other materials and equipment for the completion of the same; and to charge the expense of said labor, materials and equipment to the Contractor.

The expense so charged shall be deducted and paid by the Owner out of such moneys as may be due, or may at any time thereafter grow due to the Contractor under and by virtue of this Contract, or any art thereof; and in case such expense shall exceed the amount which would have been payable under the Contract, if the same had been completed by the Contractor, the Contractor or the surety shall pay the amount of such excess to the Owner within five (5) days of written demand therefore; and in case such expense shall be less than the amount which would have been payable under this Contract, if the same had been completed by the Contractor, the owner shall pay such difference to the Contractor within five (5) days of written demand.

XXVII Partial and Final Estimates

On, or about, the last day of the month, the Borough of Naugatuck Inspector shall make an approximate estimate of the value of the work done and of the materials incorporated into the work.

The Owner will pay the Contractor, within 30 days of receipt of an estimate, ninety-five percent (95%) of the total estimated value of the work done, as estimated by the Borough of Naugatuck Inspector less previous payments. Partial payments will not be made whenever the amounts of the estimate or estimates of work done since the last previous estimate are less than \$2,000.00.

The Borough of Naugatuck Inspector shall, as soon as practicable after the completion of work, make a final certificate of the entire amount of the work done under this Contract, and the value thereof, and the Owner shall, within thirty (30) days after such final estimate is approved, pay the entire sum so found to be due hereunder, after deducting there from all previous payments and also all percentages and deductions to be retained under any of the provisions of this Contract.

Before payment of each estimate, the Contractor shall provide the Owner with a mechanic's lien waiver from the Contractor and all persons who have done work or furnished materials under this Contract.

XXVIII Payment

The Owner, in consideration of the faithful performance by the Contractor of all and singular covenants, promises, and agreements contained herein, agrees to pay the Contractor for the full completion of the work embraced in this Contract, in the manner and within the time herein specified and limited, and to the satisfaction and approval of the Borough of Naugatuck Inspector, the prices stipulated in the said Proposal hereto attached, such payment to be made at the times and in the manner and upon the conditions herein expressly provided. The Owner also agrees to pay in addition such amounts as may be agreed upon for modifications and for extra work.

XXIX Guarantee

The Contractor guarantees that the work done under this Contract and the materials furnished by them and used in the construction of the same are free from defects or flaws. The guarantee is for a term of one (1) year from, and after, the date upon which the final estimate of the Borough of Naugatuck Inspector is formally approved by the Owner. It is hereby agreed and understood that this guarantee shall not include making any repairs made necessary by any cause or causes other than defective materials furnished by, or defective work done by, the Contractor.

XXX Rate of Progress and Time of Completion

The Contractor shall commence work within fourteen (14) calendar days of the date of the Notice to Proceed. The rate of progress shall be such that the whole work, inclusive of any add alternates, shall be performed and the grounds cleaned-up in accordance with Time for Completion, Section 3 of the supplemental conditions, unless extensions of time shall be made for the reasons, and in the manner, stated under Article XXXI, "Extension of Time".

The allotted calendar days includes time for the Contractor to obtain approval of an Erosion and Sediment Control Plan, as applicable.

XXXI Extension of Time

The Contractor expressly covenants and agrees that, in undertaking to complete the work within the time mentioned, they have taken into consideration, and made allowance for, all of the ordinary delays and hindrances incidental to such work, whether growing out of delays in securing materials or workmen or otherwise. Should the Contractor, however, be substantially delayed in the prosecution and completion of the work by any changes, additions, or omissions therein ordered in writing by the Borough of Naugatuck Inspector, or by fire, lightning, earthquake, tornado, cyclone, riot, insurrection, or war, or by the abandonment of the work by the workman engaged therein through no fault of the Contractor, or by the discharge of all or any material number of workmen in consequence of difficulties arising between the Contractor and such workmen, or by the neglect, delay, or default of any other contractor of the Owner, then the Contractor may, within five (5) days after the occurrence of the delay for which they claim allowance, notify the Borough of Naugatuck Inspector thereof in writing, and thereupon, and not otherwise, the Contractor shall be allowed such additional time for the completion of the work as

the Borough of Naugatuck Inspector, in their discretion, shall award in writing, and their decision shall be final and conclusive upon the parties.

XXXII Damages for Failure to Complete on Time

The Contractor shall pay to the Owner for each and every calendar day (including Saturdays, Sundays, and holidays) that they shall be in default in completing the entire work in the time stipulated in Article XXX, or within the extension of time they may be granted as provided in Article XXXIII, the sum of One Thousand Eight Hundred Dollars (\$1,800) per day. This sum is hereby agreed upon not as a penalty but as liquidated damages which Owner will suffer by reason of such default, time being of the essence of the Contract and a material consideration thereof. The Owner shall have the right to deduct the amount of any such damages from any monies due the Contractor under this Contract.

XXXIII No Waiver of Rights

No certificate given or payment made under this Contract, except the final certificate or final payment, shall be evidence of the performance of the Contract either wholly or in part, and no payment shall be construed to be an acceptance of defective work or improper materials. No act of the Owner or of the Borough of Naugatuck Inspector, or of any representatives of either of them in inspecting the work, nor any extension of time for the completion of the work, shall be regarded or taken as an acceptance of such work, or any part thereof, or materials used therein or thereof, either wholly or in part; but such acceptance shall be evidenced only by the final certificate of the Borough of Naugatuck Inspector.

Before any final certification shall be allowed, the Contractor shall be required, and hereby agrees, to sign and attest on said certificate a statement that they accept the same in full payment and settlement of all claims on account of work done and material furnished under this Contract, and furthermore, that all claims for materials provided or labor performed have been paid and satisfied in full. No waiver of any breach of this Contract by the Owner or anyone acting for it, or on its behalf, shall be held as a waiver of any other or subsequent breach thereof.

XXXIV Mandatory Negotiation

Contractor and the Owner agree that they will attempt to negotiate in good faith any dispute of any nature arising under this contract. The parties shall negotiate in good faith at not less than two negotiation sessions prior to seeking any resolution of any dispute under the provisions of arbitration paragraph of this contract. Each party shall have the right to legal representation at any such negotiation session.

XXXV Arbitration

Any dispute or question arising under the provisions of this contract which has not been resolved under the mandatory negotiation paragraph of this contract shall be determined by arbitration. Arbitration proceedings shall occur at a neutral location in Waterbury, Connecticut, and shall be conducted in accordance with the rules then applicable of the American Arbitration Association.

Arbitration shall proceed before a pane of one arbitrator to be selected by American Arbitration Association. The decision of the Arbitrator shall be final and may be entered in any court having jurisdiction thereof. Each party shall pay one-half of all costs and expenses of such arbitration.

XXXVI Owner's Right to Use

The Owner reserves the right to use or occupy any portion of the work considered by the Borough of Naugatuck Inspector as ready for use or occupancy. Such use or occupancy shall not be held, in any way, as final acceptance of the work or any portion thereof, or as a waiver of any portion of this Contract.

XXXVII Verification of Data

The quantities of work to be done and the materials to be furnished under this Contract, as given in the accompanying "Information for Bidders" and on the Proposal form, are approximate estimates for the purpose of comparing bids on a uniform basis. Neither the Owner nor the Borough of Naugatuck Inspector are to be held responsible for the data or information given relative to said quantities or that given on the Plans relative to existing conditions. The Contractor has judged for themselves as to such quantities and as to other circumstances affecting the cost of the performance of this Contract, and they shall not at any time assert that there was any misunderstanding in regard to the character or amount of work to be done and materials and labor to be furnished.

XXXVIII Contractor's Wage Certification Form

If applicable the Contractor or their authorized agent will be required to sign the Contractor's Wage Certification Form at the time of Contract execution.

XXXIX Verbal Statements Not Binding

It is understood and agreed that the written terms and provisions of this Agreement shall supersede all prior verbal statements of the Borough of Naugatuck Inspector or other representatives of the Owner, and such statements shall not be effective or be construed as entering into or forming a part of, or altering in anyway whatsoever, the written Agreement.

XXXX Final Estimate Constitutes Release

It is agreed that acceptance by the Contractor of the last payment made, under the provisions of Article XXVII, shall operate as and shall be a release to the Owner, and every agent thereof, from all claims and liability to Contractor for anything done or furnished for, or relating to, the work or for any act or neglect of the Owner or any agent thereof.,

No payment, however, final or otherwise, shall operate to release the Contractor or their sureties from any obligations under this Contract.

XXXXI Delays or Termination by Governmental Authorities

Notwithstanding any other provision(s) of this contract, the parties agree that in the event of a stop work order from the State Department of Transportation, Department of Environmental Protection, or any other State or Federal agency, no additional compensation will be made by Owner to Contractor for delays, inconvenience or damage sustained by Contractor due to such order, including, without limitation, damages for loss of use of equipment or idle equipment. Similarly, in the event of a termination of the project by the State DOT, DEP or any other State or Federal agency, no additional compensation will be made by Owner to Contractor for the termination, or for any delay, inconvenience or damage sustained by Contractor due to such termination, including, without limitation, damages for loss of use of equipment or idle equipment. In the event of such termination, the Borough of Naugatuck Inspector shall prepare a final certificate for the entire amount of work done up to the effective date of termination. The provisions of Sections XXIX (Guarantee) shall apply to all work completed as of the effective date of any stop Work order, as if the effective date was the date upon which the final estimate of the Borough of Naugatuck Inspector is formally approved by the Borough.

XXXXII Validity of Agreement

The provision of this Agreement shall be binding upon the Parties and their respective successor or assigns.

IN WITNESS WHEREOF, the said parties hereto have caused this instrument to be signed by their respective duly constituted officers, attested, and sealed pursuant to proper resolutions.

Signed and sealed
in the presence of

Borough of Naugatuck
Mayor

(Duly Authorized)
Contractor

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BOROUGH OF NAUGATUCK: INSURANCE AGREEMENT

1. Indemnification and Insurance

_____ ('The Contractor') shall indemnify, defend and hold harmless the State of Connecticut and Borough of Naugatuck, its officials, officers, employees and designees caused in whole or in part to the fullest extent permitted by law from and against any and all claims, suits, actions, obligations, liabilities, damages, losses or injury (including the resulting death of a person), penalties, and expenses (including reasonable attorneys' fees) to the extent arising out of the performance of this Agreement or due to the Contractor's negligence or willful misconduct or omissions of the Contractor or its employees, agents, subcontractors or representatives.

Prior to the commencement of the work, and until final completion and acceptance of the work, the Contractor shall procure and maintain the following types of insurance and maintain all insurance coverage for the life of the contract, from an insurance company or companies with an A.M. Best Rating of A- (IX) or better. Such insurance will protect and indemnify the Borough of Naugatuck from all claims which may arise out of or result from the Contractor's obligations under this agreement, whether caused by the contractor or by a subcontractor or any person or entity directly or indirectly employed by the Contractor or by anyone for whose acts said Contractor may be liable.

- A. *Workers Compensation*: The Contractor shall provide workers compensation and employer's liability insurance that complies with the regulations of the State of Connecticut with limits no less than \$100,000 each accident by bodily injury; \$100,000 each accident by disease and a policy limit of \$500,000. Such policy shall contain a 'waiver of our right to recover from other endorsement'.
- B. *Commercial General Liability Insurance*: The Contractor shall provide commercial general liability insurance policy that includes products, operations and completed operations as follows: Bodily injury & property damage with an occurrence limit of \$1,000,000; Personal & advertising injury limit of \$1,000,000 per occurrence; General aggregate limit of \$2,000,000 (other than products and completed operations); Products and completed operations aggregate limit of \$2,000,000. The policy shall name the Borough of Naugatuck as an additional insured on an ongoing basis. In addition,
- Such policy will be provided on an occurrence basis and will be primary and shall not contribute in any way to any insurance or self-insured retention carried by the additional insured.
 - Such policy shall contain a broad form contractual liability endorsement or similar wording within the policy form.
 - Such policy shall contain a waiver of subrogation in favor to the Borough of Naugatuck.
 - Such policy shall include coverage for the Contractor's sub-contractors, or any person or entity directly or indirectly employed by said Contractor or by anyone for whose acts said Contractor may be liable.
- C. *Commercial Automobile Insurance*: The Contractor shall provide commercial automobile insurance for any owned autos (symbol 1 or equivalent) in the amount of \$1,000,000 each accident covering bodily injury and property damage on a combined single limit. Such coverage shall also include hired and non-owned automobile coverage.
- D. *Umbrella Liability Insurance*: The Contractor shall provide commercial umbrella liability with limits no less than \$5,000,000 each occurrence and \$5,000,000 in the aggregate which shall be following form, without restriction or limitation, providing coverage over items (A), (B), (C), as noted above on a primary and non-contributory basis.

Prior to the issuing of any notice to proceed by the Borough of Naugatuck, the Contractor shall furnish the Borough of Naugatuck with Certificates of Insurance evidencing such insurance as set forth above. Said policies shall not be cancelled or permitted to lapse until final completion and approval of the performance of the work until ten (10) days after the Borough of Naugatuck has received written notice, by certified or registered mail, that the cancellation or change of such policy is contemplated.

The Contractor shall advise their insurers or agent of the contract provisions regarding insurance. The failure of the Contractor to notify insurers or agent of the contract provision shall not relieve the Contractor from its insurance obligations under the Agreement. Non-fulfillment of the insurance provisions shall constitute a breach of this agreement and the Borough of Naugatuck retains the right to stop work until proper evidence of insurance is provided.

This document must be signed by an owner or officer of the company.

Signed by Contractor: _____ Date: _____

Printed Name of Contractor: _____ Title: _____

Address of Contractor:

Signed by *Borough of Naugatuck*: _____ Date: _____

Printed Name of *Borough of Naugatuck*: _____ Title: _____

PERFORMANCE BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____ Dollars,
\$(_____) in lawful money of the United States, for the payment of which sum well and
truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these
presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a
certain contract with the OWNER, dated the ____ day of _____, 20__, a copy of
which is hereto attached and made a part hereof for the construction of: Downtown Sanitary,
Stormwater, and Streetscape Improvements, Naugatuck, CT.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the
undertakings, covenants, terms, conditions, and agreements of said contract during the original
term thereof, an any extensions thereof which may be granted by the OWNER, with or without
notice to the Surety and during the one year guaranty period, and if they shall satisfy all claims
and demands incurred under such contract, and shall fully indemnify and save harmless the
OWNER from all costs and damages which may suffer by reason of failure to do so, and shall
reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making
good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in anyway affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts each one of Which shall be deemed an original, this the _____ day of _____, 20__.

ATTEST:

(Principal) Secretary

By _____(s)
Principal

(SEAL)

(Witness as to Principal)

(Address)

(Address)

Surety

ATTEST:

(Surety) Secretary

(SEAL)

Witness as to Surety

By _____
Attorney-in-Fact

(Address)

(Address)

NOTES: Date of BOND must not be prior to date of Contract.
 If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

PAYMENT BOND

KNOW ALL PERSONS BY THESE PRESENTS: that

(Name of Contractor)

(Address of Contractor)

a _____, hereinafter called Principal and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

(Name of Owner)

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____ Dollars, \$(_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 201__, a copy of which is hereto attached and made a part hereof for the construction of: Downtown Sanitary, Stormwater, and Streetscape Improvements, Naugatuck, CT.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period, and if they shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in anyway affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts each one of which shall be deemed an original, this the _____ day of _____, 20__.

ATTEST:

(Principal) Secretary

By _____(s)
Principal

(SEAL)

(Witness as to Principal)

(Address)

(Address)

Surety

ATTEST:

(Surety) Secretary

(SEAL)

Witness as to Surety

By _____
Attorney-in-Fact

(Address)

(Address)

NOTES: Date of BOND must not be prior to date of Contract.
 If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the PROJECT is located.

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM
Construction Manager at Risk/General Contractor/Prime Contractor

I, _____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

Street

City

and all of its subcontractors will pay all workers on the

Project Name and Number

Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

Signed

Subscribed and sworn to before me this _____ day of _____.

Notary Public

Return to:
Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

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Form AU-766 Guarantee Bond



Purpose: A nonresident contractor working in Connecticut and a surety company licensed to do business in Connecticut use **Form AU-766** to post a guarantee bond with the Department of Revenue Services (DRS) for a specific project in the state. The guarantee bond ensures all taxes due to the State of Connecticut from the contractor are paid to DRS. Read the instructions on the reverse side before you complete this form. If you need help, call **860-541-7538**, Monday through Friday, during business hours.

Part I: Nonresident Contractor Information		
Name	Connecticut Tax Registration No.	
Address (Street or PO Box, City, State, and ZIP Code)		
Part II: Person Doing Business With a Nonresident Contractor Information		
Name	Connecticut Tax Registration No., Federal ID No., or SSN	
Address (Street or PO Box, City, State, and ZIP Code)		
Part III: Surety Company Information		
Name	Bond No.	Amount of Bond
Address (Street or PO Box, City, State, and ZIP Code)		
Part IV: Project Information <input type="checkbox"/> Check the box if this bond is for a change order.		
Physical Location of Project (Street, City or Town)		Name of Project
Commencement Date	Completion Date for Nonresident Contractor	Total Contract Price or Amount of Change Order
Conditions of the obligation for the project detailed above: <ul style="list-style-type: none"> • The nonresident contractor has entered into a contract related to real property at a Connecticut location. • The nonresident contractor and the surety company are posting a bond of 5% of the total contract price, including any change orders and add-ons, with DRS to ensure that all taxes that become due and owing during the period of the contract will be paid. • A bond must be posted within 120 days of the commencement of the contract or 30 days after the completion of the contract, whichever is earlier. • If the nonresident contractor pays all taxes, interest, and penalties within three years from the last day of the month succeeding the reporting period in which the contractor posted the bond, the bond expires; otherwise the obligation remains in full force. • This bond jointly and severally binds the nonresident contractor and the surety company, their heirs, executors, administrators, successors, and assigns for payment of this obligation. 		
Nonresident Contractor Declaration: I, the nonresident contractor named above or its authorized agent, declare under the penalty of law that I have examined Form AU-766 and, to the best of my knowledge and belief it is true, complete, and correct. I understand the penalty for willfully delivering a false document or return to DRS is a fine of not more than \$5,000, or imprisonment for not more than five years, or both.		
Print Name		Title
Authorized Signature		Date
Surety Company Declaration: I, an authorized agent of the surety company named above, declare under the penalty of law that I have examined this Form AU-766 and, to the best of my knowledge and belief it is true, complete, and correct. I understand the penalty for willfully delivering a false document or return to DRS is a fine of not more than \$5,000, or imprisonment for not more than five years, or both.		
_____		Seal:
Print Name	Title	
Authorized Signature	Date	

General Instructions

A nonresident contractor and a surety company licensed to do business in Connecticut must execute **Form AU-766, Guarantee Bond**, to post a guarantee bond with the Department of Revenue Services (DRS) for a specific project in Connecticut. A power of attorney for the person signing the bond on behalf of the surety company **must** be attached to the bond, carry the corporate seal of the surety company, and bear the same date as the execution date of the bond.

A nonresident contractor has the option of filing a guarantee bond or a cash bond instead of the customer making a deposit with DRS under Conn. Gen. Stat. §12-430(7)(B). Under this option, the nonresident contractor has 120 days from the commencement of the contract or 30 days after the completion of the contract, whichever is earlier, to file a guarantee bond or a cash bond (Form AU-72) with DRS.

Return Form AU-766 to: Department of Revenue Services
Discovery Unit
25 Sigourney Street
Hartford CT 06106-5032

See **Special Notice 2005(12), Nonresident Contractor Bonds and Deposits**, for more information.

Nonresident contractor means a contractor who does not maintain a regular place of business in Connecticut.

Regular place of business means:

- Any bona fide office, factory, warehouse, or other space in Connecticut at which a contractor is doing business in its own name in a regular and systematic manner; **and**
- Which place is continuously maintained, occupied, and used by the contractor in carrying on its business through its employees regularly in attendance to carry on the contractor's business in the contractor's own name.

A regular place of business **does not include**:

- A place of business for a statutory agent for service of process or a temporary office whether or not it is located at the site of construction;
- Locations used by the contractor only for the duration of the contract, such as short-term leased offices, warehouses, storage facilities, or facilities that do not have full time staff with regular business hours; **or**
- An office maintained, occupied, and used by a person affiliated with a contractor.

Contract price means the total contract price, including deposits, amounts held as retainage, costs for any change orders, or charges for add-ons.

Person doing business with a nonresident contractor means any person who makes payments of the contract price to a nonresident contractor, and includes, but is not limited to property owners, governmental, charitable or religious entities, and resident or nonresident general contractors or subcontractors. An owner or tenant of residential real property is not a person doing business with a nonresident contractor and is not required to comply with the provisions of Conn. Gen. Stat. §12-430(7). However, the nonresident contractor doing business with such an owner or tenant must comply with the bond requirements under Conn. Gen. Stat. §12-430(7)(F).

Commencement of the contract means the time when the nonresident contractor signs the contract, but, in any event, occurs no later than when the work under the contract actually starts. If a change order is made after the commencement of the original contract, the change order commences when it is signed by the nonresident contractor, but, in any event, occurs no later than when the work under the change order actually starts.

Completion of the contract means the time when the nonresident contractor makes the final periodic billing for the contract. The final periodic billing may be due before payment of any retainage becomes due. If a change order is made after the final periodic billing for the original contract, the change order is complete when the nonresident contractor bills for the change order.

Residential real property means real property used exclusively for residential purposes and consisting of three or fewer dwelling units in one of which the owner or tenant resides.

Any bond that bears an erasure or alteration, regardless of its nature, must have the change authenticated by a notation in the margin. The notation should describe the correction and be signed in the name of the surety company by the officer who executed the bond and must bear the corporate seal of the surety company.

Specific Instructions

Part I: Enter the name and complete address of the nonresident contractor furnishing the bond. Include the nonresident contractor's Connecticut tax registration number. The name and address of the nonresident contractor appearing on the bond must agree with the name and address on **Form REG-1, Business Taxes Registration Application**, filed with DRS. (If the information originally provided on Form REG-1 is now incorrect, you must notify the DRS Registration Unit in writing of the correct information.) If the nonresident contractor is a corporation, the corporate name appearing on the bond must be the same shown in the records of the Office of the Secretary of State, or similar agency of another state if the nonresident contractor is not a Connecticut corporation.

Part II: Enter the name and complete address of the person doing business with the nonresident contractor. If the nonresident contractor is the general contractor, enter the name and address of the owner or tenant of the property who has entered the contract. If the nonresident contractor is a subcontractor, enter the name and address of the general contractor.

Enter the Connecticut tax registration number of the person doing business with the nonresident contractor. If the person doing business with the nonresident contractor does not have a Connecticut tax registration number, enter that person's Federal Employer Identification Number or Social Security Number.

Part III: Enter the name and complete address of the surety company that guarantees this bond. Include the bond number.

Part IV: Check the box if the deposit is for a change order occurring after the bond for the initial contract was furnished to DRS.

Enter the name of the project and the complete address including the street address and the city or town where the project is physically located.

Enter the commencement date of this project or change order.

Enter the date by which the nonresident contractor is expected to complete work on this project or change order.

Enter, in words and figures, the total amount to be paid to the nonresident contractor under the contract. Indicate if this amount is an estimate.

Declarations: An authorized representative for the nonresident contractor and the surety company must sign and date the declaration on Form AU-766. The name of the nonresident contractor and the surety company must be exactly as it appears on the bond. The corporate seal of the surety company must be affixed by its signature on Form AU-766.

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of _____)
) ss.
County of _____)

_____, being first duly sworn, deposes and says that:

1. I am _____ of _____ herein referred to as the Bidder that has submitted the attached Bid;
2. I am fully informed respecting the preparation and contents of the attached Bid and of all pertinent circumstances respecting such Bid;
3. Such Bid is genuine and is not a collusive or sham bid;
4. Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such Contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix the price or prices in the attached Bid or of any other Bidder, or, to fix any overhead, profit or cost element in the bid price or the bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Borough of Naugatuck or any person interested in the proposed Contract; and
5. The price or prices quoted in the attached Bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit.

(Signed) _____

Title

Subscribed and sworn before me

This _____ day of _____, 20__

(Notary Public)

My Commission expires _____

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NON-COLLUSION AFFIDAVIT OF SUBCONTRACTOR

State of _____)
County of _____) ss.

_____, being first duly sworn, deposes and says that:

1. I am _____ of _____ herein referred to as the "Subcontractor";
2. I am fully informed respecting the preparation and contents of the Subcontractor's Proposal submitted by the Subcontractor to _____, the Contractor for certain work in connection with the _____ Contract pertaining to the _____ Project in Naugatuck, Connecticut;
3. Such Subcontractor's Proposal is genuine and is not a collusive or sham Proposal;
4. Neither the Subcontractor nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affidavit, has in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Bidder, firm or person to submit a collusive or sham Proposal in connection with such Contract, or refrain from submitting a Proposal in connection with such Contract, or has in any manner, directly or indirectly, sought by unlawful agreement or connivance with any Bidder, firm or person to fix the price or prices in said Subcontractor's Proposal, or to fix any overhead, profit or cost element of the price or prices in said Subcontractor's Proposal, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Borough of Naugatuck or any person interested in the proposed Contract; and
5. The price or prices quoted in the Subcontractor's Proposal are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affidavit.
6. (a) No proposed subcontractor shall be disapproved by the Borough of Naugatuck except for cause.
 - (a) The Contractor shall be fully responsible to the Borough of Naugatuck for the acts and omissions of their subcontractors, and of persons either directly or indirectly employed by them, as they are for the acts and omissions of persons directly employed by the Contractor.
 - (b) The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to require compliance by each subcontractor with the applicable provisions of this Contract for:
 - (c) Nothing contained in this Contract shall create any contractual relationship between any subcontractor and the Borough of Naugatuck.
 - (d) No proposed subcontractor shall be disapproved by the Borough of Naugatuck except for cause.

- (e) The Contractor shall be fully responsible to the Borough of Naugatuck for the acts and omissions of their subcontractors, and of persons either directly or indirectly employed by them, as they are for the acts and omissions of persons directly employed by the Contractor.
- (f) The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to require compliance by each subcontractor with the applicable provisions of this Contract for: Downtown Sanitary, Stormwater, and Streetscape Improvements, Naugatuck, CT.
- (g) Nothing contained in this Contract shall create any contractual relationship between any subcontractor and the Borough of Naugatuck.

OTHER CONTRACTS

The Borough of Naugatuck may award, or may have awarded, other Contracts for additional work, and the Contractor shall cooperate fully with such other Contractors, by scheduling their own work with that to be performed under other Contracts as may be directed by the Borough of Naugatuck. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other Contractor as scheduled.

(Signed) _____

Title

Subscribed and sworn before me

This _____ day of _____, 20__

(Notary Public)

My commission expires _____

STATE OF CONNECTICUT
Certificate of Compliance with
Connecticut General Statute Section 31 - 57b

I hereby certify that all of the statements herein contained below have been examined by me, and to the best of my knowledge and belief are true and correct.

The _____ **HAS / HAS NOT**
Company Name (Cross out Non-applicable)

been cited for three (3) or more willful or serious or serious violations of any Occupational Safety and Health Act (OSHA) or of any standard, order or regulation promulgated pursuant to such act, during the three year period preceding the bid, provided such violations were cited in accordance with the provisions of any State Occupational Safety and Health Act of 1970, and not abated within the time fixed by the citation and such citation has not been set aside following appeal to the appropriate agency of court having jurisdiction or **HAS / HAS NOT** (Cross out Non-applicable) received one or more criminal convictions related to the injury or death of any employee in the three-year period preceding the bid.

The list of violations (if applicable) is attached.

(Name of Firm, Organization or Corporation)

Signed:

Written Signature:

Name Typed: (Corporation Seal)

Title:

(Title of Above Person, typed)

Dated:

State of _____)
County of _____) *ss: A.D., 20* _____)

Sworn to and personally appeared before me for the above, _____,
(Name of Firm, Organization, Corporation)

Signer and Sealer of the foregoing instrument of and acknowledged the same to be the free act and deed of

_____, and his/her free act and deed as
(Name of Person appearing in front of Notary or Clerk)

(Title of Person appearing in front of Notary or Clerk)

My Commission Expires:

(Notary Public) (Seal)

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STATE OF CONNECTICUT
NONDISCRIMINATION CERTIFICATION – Affidavit
By Entity
For Contracts Valued at \$50,000 or More

Documentation in the form of an affidavit signed under penalty of false statement by a chief executive officer, president, chairperson, member, or other corporate officer duly authorized to adopt corporate, company, or partnership policy that certifies the contractor complies with the nondiscrimination agreements and warranties under Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended

INSTRUCTIONS:

For use by an entity (corporation, limited liability company, or partnership) when entering into any contract type with the State of Connecticut or Connecticut Public Entity valued at \$50,000 or more for any year of the contract. Complete all sections of the form. Sign form in the presence of a Commissioner of Superior Court or Notary Public. Submit to the awarding agency prior to contract execution.

AFFIDAVIT:

I, the undersigned, am over the age of eighteen (18) and understand and appreciate the obligations of an oath. I am _____ of _____, an entity

Signatory's Title

Name of Entity

duly formed and existing under the laws of _____.
Name of State or Commonwealth

I certify that I am authorized to execute and deliver this affidavit on behalf of

_____ and that _____
Name of Entity Name of Entity

has a policy in place that complies with the nondiscrimination agreements and warranties of Connecticut General Statutes §§ 4a-60(a)(1) and 4a-60a(a)(1), as amended.

Authorized Signatory

Printed Name

Sworn and subscribed to before me on this _____ day of _____, 20____.

**Commissioner of the Superior Court/
Notary Public**

Commission Expiration Date

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COMMISSION ON HUMAN RIGHTS AND OPPORTUNITIES
CONTRACT COMPLIANCE REGULATIONS
NOTIFICATION TO BIDDERS

(Revised 09/3/15)

The contract to be awarded is subject to contract compliance requirements mandated by [Sections 4a-60](#) and [4a-60a](#) of the Connecticut General Statutes; and, when the awarding agency is the State, [Sections 46a-71\(d\)](#) and [46a-81i\(d\)](#) of the Connecticut General Statutes. There are Contract Compliance Regulations codified at [Section 46a-68j-21 through 43](#) of the Regulations of Connecticut State Agencies, which establish a procedure for awarding all contracts covered by [Sections 4a-60](#) and [46a-71\(d\)](#) of the Connecticut General Statutes.

According to [Section 46a-68j-30\(9\)](#) of the Contract Compliance Regulations, every agency awarding a contract subject to the contract compliance requirements has an obligation to “aggressively solicit the participation of legitimate minority business enterprises as bidders, contractors, subcontractors and suppliers of materials.” “Minority business enterprise” is defined in [Section 4a-60](#) of the Connecticut General Statutes as a business wherein fifty-one percent or more of the capital stock, or assets belong to a person or persons: “(1) Who are active in daily affairs of the enterprise; (2) who have the power to direct the management and policies of the enterprise; and (3) who are members of a minority, as such term is defined in subsection (a) of [Section 32-9n.](#)” “Minority” groups are defined in [Section 32-9n](#) of the Connecticut General Statutes as “(1) Black Americans . . . (2) Hispanic Americans . . . (3) persons who have origins in the Iberian Peninsula . . . (4) Women . . . (5) Asian Pacific Americans and Pacific Islanders; (6) American Indians . . .” An individual with a disability is also a minority business enterprise as provided by [Section 4a-60g](#) of the Connecticut General Statutes. The above definitions apply to the contract compliance requirements by virtue of [Section 46a-68j-21\(11\)](#) of the Contract Compliance Regulations.

The awarding agency will consider the following factors when reviewing the bidder’s qualifications under the contract compliance requirements:

- (a) the bidder’s success in implementing an affirmative action plan;
- (b) the bidder’s success in developing an apprenticeship program complying with [Sections 46a-68-1 to 46a-68-17](#) of the Administrative Regulations of Connecticut State Agencies, inclusive;
- (c) the bidder’s promise to develop and implement a successful affirmative action plan;
- (d) the bidder’s submission of employment statistics contained in the “Employment Information Form”, indicating that the composition of its workforce is at or near parity when compared to the racial and sexual composition of the workforce in the relevant labor market area; and
- (e) the bidder’s promise to set aside a portion of the contract for legitimate minority business enterprises. [See Section 46a-68j-30\(10\)\(E\)](#) of the Contract Compliance Regulations.

INSTRUCTIONS AND OTHER INFORMATION

The following [BIDDER CONTRACT COMPLIANCE MONITORING REPORT](#) must be completed in full, signed, and submitted with the bid for this contract. The contract awarding agency and the Commission on Human Rights and Opportunities will use the information contained thereon to determine the bidders compliance to [Sections 4a-60](#) and [4a-60a](#) CONN. GEN. STAT., and [Sections 46a-68j-23](#) of the Regulations of Connecticut State Agencies regarding equal employment opportunity, and the bidder’s good faith efforts to include minority business enterprises as subcontractors and suppliers for the work of the contract.

1) **Definition of Small Contractor**

[Section 4a-60g](#) CONN. GEN. STAT. defines a small contractor as a company that has been doing business under the same management and control and has maintained its principal place of business in Connecticut for a one year period immediately prior to its application for certification under this section, had gross revenues not exceeding fifteen million dollars in the most recently completed fiscal year, and at least fifty-one percent of the ownership of which is held by a person or persons who are active in the daily affairs of the company, and have the power to direct the management and policies of the company, except that a nonprofit corporation shall be construed to be a small contractor if such nonprofit corporation meets the requirements of subparagraphs (A) and (B) of subdivision [4a-60g](#) CONN. GEN. STAT.

2) Description of Job Categories (as used in Part IV Bidder Employment Information) (Page 2)

MANAGEMENT: Managers plan, organize, direct, and control the major functions of an organization through subordinates who are at the managerial or supervisory level. They make policy decisions and set objectives for the company or departments. They are not usually directly involved in production or providing services. Examples include top executives, public relations managers, managers of operations specialties (such as financial, human resources, or purchasing managers), and construction and engineering managers.

BUSINESS AND FINANCIAL OPERATIONS: These occupations include managers and professionals who work with the financial aspects of the business. These occupations include accountants and auditors, purchasing agents, management analysts, labor relations specialists, and budget, credit, and financial analysts.

MARKETING AND SALES: Occupations related to the act or process of buying and selling products and/or services such as sales engineer, retail sales workers and sales representatives including wholesale.

LEGAL OCCUPATIONS: In-House Counsel who is charged with providing legal advice and services in regards to legal issues that may arise during the course of standard business practices. This category also includes assistive legal occupations such as paralegals, legal assistants.

COMPUTER SPECIALISTS: Professionals responsible for the computer operations within a company are grouped in this category. Examples of job titles in this category include computer programmers, software engineers, database administrators, computer scientists, systems analysts, and computer support specialists

ARCHITECTURE AND ENGINEERING: Occupations related to architecture, surveying, engineering, and drafting are included in this category. Some of the job titles in this category include electrical and electronic engineers, surveyors, architects, drafters, mechanical engineers, materials engineers, mapping technicians, and civil engineers.

OFFICE AND ADMINISTRATIVE SUPPORT: All clerical-type work is included in this category. These jobs involve the preparing, transcribing, and preserving of written communications and records; collecting accounts; gathering and distributing information; operating office machines and electronic data processing equipment; and distributing mail. Job titles listed in this category include telephone operators, bill and account collectors, customer service representatives, dispatchers, secretaries and administrative assistants, computer operators and clerks (such as payroll, shipping, stock, mail and file).

BUILDING AND GROUNDS CLEANING AND MAINTENANCE: This category includes occupations involving landscaping, housekeeping, and janitorial services. Job titles found in this category include supervisors of landscaping or housekeeping, janitors, maids, grounds maintenance workers, and pest control workers.

CONSTRUCTION AND EXTRACTION: This category includes construction trades and related occupations. Job titles found in this category include boilermakers, masons (all types), carpenters, construction laborers, electricians, plumbers (and related trades), roofers, sheet metal workers, elevator installers, hazardous materials removal workers, paperhangers, and painters. Paving, surfacing, and tamping equipment operators; drywall and ceiling tile installers; and carpet, floor and tile installers and finishers are also included in this category. First line supervisors, foremen, and helpers in these trades are also grouped in this category.

INSTALLATION, MAINTENANCE AND REPAIR: Occupations involving the installation, maintenance, and repair of equipment are included in this group. Examples of job titles found here are heating, ac, and refrigeration mechanics and installers; telecommunication line installers and repairers; heavy vehicle and mobile equipment service technicians and mechanics; small engine mechanics; security and fire alarm systems installers; electric/electronic repair, industrial, utility and transportation equipment; millwrights; riggers; and manufactured building and mobile home installers. First line supervisors, foremen, and helpers for these jobs are also included in the category.

MATERIAL MOVING WORKERS: The job titles included in this group are Crane and tower operators; dredge, excavating, and lading machine operators; hoist and winch operators; industrial truck and tractor operators; cleaners of vehicles and equipment; laborers and freight, stock, and material movers, hand; machine feeders and offbearers; packers and packagers, hand; pumping station operators; refuse and recyclable material collectors; and miscellaneous material moving workers.

PRODUCTION WORKERS: The job titles included in this category are chemical production machine setters, operators and tenders; crushing/grinding workers; cutting workers; inspectors, testers sorters, samplers, weighers; precious stone/metal workers; painting workers; cementing/gluing machine operators and tenders; etchers/engravers; molders, shapers and casters except for metal and plastic; and production workers.

3) Definition of Racial and Ethnic Terms (as used in Part IV Bidder Employment Information) (Page 3)

<p><u>White</u> (not of Hispanic Origin)-All persons having origins in any of the original peoples of Europe, North Africa, or the Middle East.</p> <p><u>Black</u> (not of Hispanic Origin)-All persons having origins in any of the Black racial groups of Africa.</p> <p><u>Hispanic</u>- All persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.</p>	<p><u>Asian or Pacific Islander</u>- All persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands. This area includes China, India, Japan, Korea, the Philippine Islands, and Samoa.</p> <p><u>American Indian or Alaskan Native</u>- All persons having origins in any of the original peoples of North America, and who maintain cultural identification through tribal affiliation or community recognition.</p>
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BIDDER CONTRACT COMPLIANCE MONITORING REPORT

PART 1 – Bidder Information

<p>Company Name: Street Address: City & State: Chief Executive:</p>	<p>Bidder Federal Employer Identification Number: Or Social Security Number:</p>
<p>Major Business Activity: (brief description)</p>	<p>Bidder Identification (response optional/definitions on page 1)</p> <p>-Bidder is a small contractor? Yes No -Bidder is a minority business enterprise? Yes No (If yes, check ownership category) Black Hispanic Asian American American Indian/Alaskan Native Iberian Peninsula Individual(s) with a Physical Disability Female -Bidder is certified as above by State of CT? Yes No</p>
<p>Bidder Parent Company: (If any)</p>	
<p>Other Locations in CT: (If any)</p>	

PART II - Bidder Nondiscrimination Policies and Procedures

<p>1. Does your company have a written Affirmative Action/Equal Employment Opportunity statement posted on company bulletin boards? Yes No</p>	<p>7. Do all of your company contracts and purchase orders contain non-discrimination statements as required by Sections 4a-60 & 4a-60a Conn. Gen. Stat.? Yes No</p>
<p>2. Does your company have the state-mandated sexual harassment prevention in the workplace policy posted on company bulletin boards? Yes No</p>	<p>8. Do you, upon request, provide reasonable accommodation to employees, or applicants for employment, who have physical or mental disability? Yes No</p>
<p>3. Do you notify all recruitment sources in writing of your company's Affirmative Action/Equal Employment Opportunity employment policy? Yes No</p>	<p>9. Does your company have a mandatory retirement age for all employees? Yes No</p>
<p>4. Do your company advertisements contain a written statement that you are an Affirmative Action/Equal Opportunity Employer? Yes No</p>	<p>10. If your company has 50 or more employees, have you provided at least two (2) hours of sexual harassment training to all of your supervisors? Yes No N/A</p>
<p>5. Do you notify the Ct. State Employment Service of all employment openings with your company? Yes No</p>	<p>11. If your company has apprenticeship programs, do they meet the Affirmative Action/Equal Employment Opportunity requirements of the apprenticeship standards of the Ct. Dept. of Labor? Yes No N/A</p>
<p>6. Does your company have a collective bargaining agreement with workers? Yes No</p> <p>6a. If yes, do the collective bargaining agreements contain non-discrimination clauses covering all workers? Yes No</p> <p>6b. Have you notified each union in writing of your commitments under the nondiscrimination requirements of contracts with the state of CT? Yes No</p>	<p>12. Does your company have a written affirmative action Plan? Yes No If no, please explain.</p> <p>13. Is there a person in your company who is responsible for equal employment opportunity? Yes No If yes, give name and phone number:</p>

1. Will the work of this contract include subcontractors or suppliers? Yes No

1a. If yes, please list all subcontractors and suppliers and report if they are a small contractor and/or a minority business enterprise. (defined on page 1 / use additional sheet if necessary)

1b. Will the work of this contract require additional subcontractors or suppliers other than those identified in 1a. above? Yes No

PART IV - Bidder Employment Information

Date:

JOB CATEGORY*	OVERALL TOTALS	WHITE (not of Hispanic origin)		BLACK (not of Hispanic origin)		HISPANIC		ASIAN or PACIFIC ISLANDER		AMERICAN INDIAN or ALASKAN NATIVE	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Management											
Business & Financial Ops											
Marketing & Sales											
Legal Occupations											
Computer Specialists											
Architecture/Engineering											
Office & Admin Support											
Bldg/ Grounds Cleaning/Maintenance											
Construction & Extraction											
Installation , Maintenance & Repair											
Material Moving Workers											
Production Occupations											
TOTALS ABOVE											
Total One Year Ago											
FORMAL ON THE JOB TRAINEES (ENTER FIGURES FOR THE SAME CATEGORIES AS ARE SHOWN ABOVE)											
Apprentices											
Trainees											

*NOTE: JOB CATEGORIES CAN BE CHANGED OR ADDED TO (EX. SALES CAN BE ADDED OR REPLACE A CATEGORY NOT USED IN YOUR COMPANY)

1. Which of the following recruitment sources are used by you? (Check yes or no, and report percent used)				2. Check (X) any of the below listed requirements that you use as a hiring qualification (X)		3. Describe below any other practices or actions that you take which show that you hire, train, and promote employees without discrimination
SOURCE	YES	NO	% of applicants provided by source			
State Employment Service					Work Experience	
Private Employment Agencies					Ability to Speak or Write English	
Schools and Colleges					Written Tests	
Newspaper Advertisement					High School Diploma	
Walk Ins					College Degree	
Present Employees					Union Membership	
Labor Organizations					Personal Recommendation	
Minority/Community Organizations					Height or Weight	
Others (please identify)					Car Ownership	
					Arrest Record	
					Wage Garnishments	

Certification (Read this form and check your statements on it CAREFULLY before signing). I certify that the statements made by me on this BIDDER CONTRACT COMPLIANCE MONITORING REPORT are complete and true to the best of my knowledge and belief, and are made in good faith. I understand that if I knowingly make any misstatements of facts, I am subject to be declared in non-compliance with Section 4a-60, 4a-60a, and related sections of the CONN. GEN. STAT.

(Signature)	(Title)	(Date Signed)	(Telephone)
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This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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GUIDELINES FOR USE OF EJCDC® C-700, STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT

EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), is the foundation document for the EJCDC Construction Series. The General Conditions define the basic rights, responsibilities, risk allocations, and contractual relationship of the Owner and Contractor, and establish how the Contract is to be administered.

2.0 OTHER DOCUMENTS

EJCDC documents are intended to be used as a system and changes in one EJCDC document may require a corresponding change in other documents. Other EJCDC documents may also serve as a reference to provide insight or guidance for the preparation of this document.

These General Conditions have been prepared for use with either EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price), or EJCDC® C-525, Agreement Between Owner and Contractor for Construction Contract (Cost-Plus-Fee) (2018 Editions). The provisions of the General Conditions and the Agreement are interrelated, and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018).

The full EJCDC Construction series of documents is discussed in the EJCDC® C-001, Commentary on the 2018 EJCDC Construction Documents (2018).

3.0 ORGANIZATION OF INFORMATION

All parties involved in a construction project benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. Careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition) when preparing documents. EJCDC® N-122/AIA® A521 is available at no charge from the EJCDC website, www.ejcdc.org, and from the websites of EJCDC's sponsoring organizations.

If CSI MasterFormat™ is used for organizing the Project Manual, consult CSI MasterFormat™ for the appropriate document number (e.g., under 00 11 00, Advertisements and Invitations), and accordingly number the document and its pages.

4.0 EDITING THIS DOCUMENT

Remove these Guidelines for Use. Some users may also prefer to remove the two cover pages.

Although it is permissible to revise the Standard EJCDC Text of C-700 (the content beginning at page 1 and continuing to the end), it is common practice to leave the Standard EJCDC Text of C-700 intact and unaltered, with modifications and supplementation of C-700's provisions set forth in EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018). If the Standard Text itself is revised, the

user must comply with the terms of the License Agreement, Paragraph 4.0, Document-Specific Provisions, concerning the tracking or highlighting of revisions. The following is a summary of the relevant License Agreement provisions:

1. The term “Standard EJCDC Text” for C-700 refers to all text prepared by EJCDC in the main body of the document. Document covers, logos, footers, instructions, or copyright notices are not Standard EJCDC Text for this purpose.
2. During the drafting or negotiating process for C-700, it is important that the two contracting parties are both aware of any changes that have been made to the Standard EJCDC Text. Thus, if a draft or version of C-700 purports to be or appears to be an EJCDC document, the user must plainly show all changes to the Standard EJCDC Text, using “Track Changes” (redline/strikeout), highlighting, or other means of clearly indicating additions and deletions.
3. If C-700 has been revised or altered and is subsequently presented to third parties (such as potential bidders, grant agencies, lenders, or sureties) as an EJCDC document, then the changes to the Standard EJCDC Text must be shown, or the third parties must receive access to a version that shows the changes.
4. Once the document is ready to be finalized (and if applicable executed by the contracting parties), it is no longer necessary to continue to show changes to the Standard EJCDC Text. The user may produce a final version of the document in a format in which all changes are accepted, and the document at that point does not need to include any “Track Changes,” redline/strikeout, highlighting, or other indication of additions and deletions to the Standard EJCDC Text.

5.0 LICENSE AGREEMENT

This document is subject to the terms and conditions of the **License Agreement, 2018 EJCDC® Construction Series Documents**. A copy of the License Agreement was furnished at the time of purchase of this document, and is available for review at www.ejcdc.org and the websites of EJCDC’s sponsoring organizations.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor’s plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 - 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 - 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 - 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
- a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings*: The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

- Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
 - F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
 - G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
 - H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
 - I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
 - J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
 - K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

- A. *Contractor's Request; Governing Criteria*: Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee*: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
1. Observations by Engineer;
 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. Use or occupancy of the Work or any part thereof by Owner;
 5. Any review and approval of a Shop Drawing or Sample submittal;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
 - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
 - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
 - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
- 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 6. Expenses incurred in preparing and advancing Claims.
- 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:* Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance:* Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

- A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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SECTION C-800

SUPPLEMENTARY GENERAL CONDITIONS

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added thereto.

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

SC-1.01.A.— Add the following definition:

30. *Borough of Naugatuck (Borough)* – The Owner or any authorized representative of the Borough.

ARTICLE 2—PRELIMINARY MATTERS

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

SC-3.01 Delete Paragraph 3.01.C in its entirety and insert the following in its place:

- C. The Plans, Standards, and Specifications forming part of this Contract are intended to be explanatory of each other, but should any discrepancy appear, or misunderstanding arise, as to the import of anything contained in either, the explanation and decision of the Borough of Naugatuck shall be final and binding on the Contractor; and all directions and explanations required, to complete and make effective any of the provisions of the Contract and Specifications, shall be given by the Borough of Naugatuck. Corrections of errors and omissions in the Drawings, Standard, or Specifications may be made by the Borough of Naugatuck when such corrections are necessary for the proper fulfillment of the Contract Documents as construed by the Borough of Naugatuck. The effect of such corrections shall date from the time that the Borough of Naugatuck gives due notice thereof to the Contractor.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01.A – Delete Paragraph 4.01 A. in its entirety and insert the following in its place:

- A. The Contractor shall commence work within ten (10) calendar days of the date of the written "Notice to Proceed" from the Owner and the Contractor shall fully complete this Contract within one-hundred and twenty (120) days from the date of the written "Notice to Proceed."

ARTICLE 5—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.03 *Subsurface and Physical Conditions*

SC-5.03 Delete paragraph A. in its entirety and insert the following in its place:

- A. The following reports are included in the appendices of the Contract Document for informational purposes only:
 - 1. CCTV Inspections of Sewers in the Borough of Naugatuck, CT 12/20/2016 – 12/21/2016 by National water Main Cleaning Co.
 - 2. SSES Phase 1 Manhole Inspection Results, 10/3/2016, by Kleinfelder
 - 3. Naugatuck Dye, Smoke, Flood Testing Report, by Flow Assessment Services

5.06 *Hazardous Environmental Conditions*

SC-5.06 Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

- A. No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.
- B. Not Used.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

- 1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be the form provided by the Owner in the Contract Documents.
- 2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be the form provided by the Owner in the Contract Documents.

6.02 *Insurance—General Provisions*

SC-6.02 Delete the last sentence of Paragraph 6.02 A. and insert the following:

The Contractor shall procure and maintain the following types of insurance and maintain all insurance coverage for the life of the contract, from an insurance company or companies with an A.M. Best Rating of A-(IX) or better. Such insurance will protect and indemnify the Borough of Naugatuck from all claims which may arise out of or result from the Contractor's obligations under this agreement, whether caused by the contractor or by a subcontractor or any person or entity directly or indirectly employed by the Contractor or by anyone for whose acts said Contractor may be liable.

6.03 *Contractor's Insurance*

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

- D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: Engineer's Consultants.
- E. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions). The limits of liability must comply with the Borough of Naugatuck Insurance Agreement, included in the Contract Documents.

6.04 *Builder's Risk and Other Property Insurance*

SC-6.04 Delete Paragraph 6.04.A and insert the following in its place:

- A. Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

- F. *Builder's Risk Requirements:* The builder's risk insurance must:
 - 1. be written on a builder's risk "all risk" policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).
 - a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.
 - b. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake, volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance will be provided through other insurance policies acceptable to Owner and Contractor.

2. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).
4. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
5. extend to cover damage or loss to insured property while in transit.
6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.
7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.
8. include performance/hot testing and start-up, if applicable.
9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.
10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds."

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.03 *Labor; Working Hours*

SC-7.03 Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Regular working hours will be **Monday through Friday, 7 am to 5 pm.**

7.06 *Substitutes*

SC-7.07.B – Delete paragraph in its entirety and insert "Deleted".

SC-7.07.E – Delete the second sentence of paragraph and insert the following in its place:

Owner may not require that Contractor use a specific replacement.

7.10 *Taxes*

SC-7.10 Add a new paragraph immediately after Paragraph 7.10.A:

- A. Owner is exempt from payment of sales and compensating use taxes of the State of **Connecticut** and of cities and counties thereof on all materials to be incorporated into the Work.
 - 1. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 - 2. Owner's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

ARTICLE 8—OTHER WORK AT THE SITE

8.02 *Coordination*

SC-8.02 Add the following new Paragraph 8.02.C immediately after Paragraph 8.02.B:

- C. Should CONTRACTOR cause damage to the work or property of any separate contractor at the site, or should any claim arising out of CONTRACTOR'S performance of the Work at the site be made by any separate contractor against CONTRACTOR, OWNER, ENGINEER, ENGINEER'S Consultants, or any other person, CONTRACTOR shall promptly attempt to settle with such other contractor by agreement, or to otherwise resolve the dispute by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, defend, indemnify and hold OWNER, ENGINEER, and ENGINEER'S Consultants, harmless from and against all claims, damages, losses, and expenses (including, but not limited to, fees of engineers, architects, attorneys, and other professionals, and court and arbitration costs) arising directly, indirectly, or consequentially out of any action, legal or equitable, brought by any separate contractor against OWNER, ENGINEER, or ENGINEER'S Consultants, to the extent based on a claim arising out of the CONTRACTOR'S performance of the Work. Should a separate contractor cause damage to the Work or property of CONTRACTOR or should the performance of Work by any separate contractor at the site give rise to any other claim, CONTRACTOR shall not institute any action, legal or equitable, against OWNER, ENGINEER, or ENGINEER'S Consultants or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from OWNER, ENGINEER, or ENGINEER'S Consultants, on such damage or claim. If CONTRACTOR is delayed at any time in performing or furnishing Work by any act or neglect of a separate contractor and OWNER and CONTRACTOR are unable to agree to the extent of any adjustment in Contract Times attributable thereto, CONTRACTOR may make a claim for an extension of times in accordance with Article 11.05. The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Owner, the Engineer, or the Engineer's consultants on account of any delay in the performance or furnishing of the Work and/or any delay or suspension of any portion of the Work, whether such delay is caused by the Owner, the Engineer, the Engineer's consultants or otherwise. The Contractor

acknowledges that the Contractor's sole remedy for any such delay and/or suspension will be an extension of time in accordance with Article 11.05.

ARTICLE 9—OWNER'S RESPONSIBILITIES

No suggested Supplementary Conditions in this Article.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.03 Resident Project Representative

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.B:

- C. The Resident Project Representative (RPR) will be Owner's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:
 1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
 2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.
 3. *Liaison*
 - a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
 4. *Review of Work; Defective Work*
 - a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.
 - c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
 5. *Inspections and Tests*

- a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.
 - b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
6. *Records:*
- a. Prepare a daily report or keep a diary or log book, recording Contractor's hours on the Site, Subcontractors present at the Site, weather conditions, data relative to questions of Change Orders, Field Orders, Work Change Directives, or changed conditions, Site visitors, deliveries of equipment or materials, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
 - b. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
 - c. Maintain records for use in preparing Project documentation.
7. *Reports:*
- a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and schedule of Shop Drawing and Sample submittals.
 - b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
 - c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, force majeure or delay events, damage to property by fire or other causes, or the discovery of any Constituent of Concern or Hazardous Environmental Condition.
8. *Payment Requests:* Review applications for payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
9. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Contract Documents to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.
10. *Completion*

- a. Participate in Engineer’s visits to the Site to determine Substantial Completion, assist in the determination of Substantial Completion and the preparation of a punch list of items to be completed or corrected.
 - b. Participate in Engineer’s final visit to the Site to determine completion of the Work, in the company of Owner and Contractor, and prepare a final punch list of items to be completed and deficiencies to be remedied.
 - c. Observe whether all items on the final list have been completed or corrected and make recommendations to Engineer concerning acceptance and issuance of the notice of acceptability of the work.
- D. The RPR will not:
1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including “or-equal” items).
 2. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.
 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.
 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.
 6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
 7. **Authorize Owner to occupy the Project in whole or in part.**

ARTICLE 11—CHANGES TO THE CONTRACT

No suggested Supplementary Conditions in this Article.

ARTICLE 12—CLAIMS

SC 12.01.C Add the following sentence to the end of Paragraph 12.01.C:

Contractor shall carry on the Work and maintain the progress schedule during the dispute resolution proceedings unless otherwise agreed in writing by Owner and Contractor.

ARTICLE 13—COST OF WORK; ALLOWANCES, UNIT PRICE WORK

13.01 Cost of the Work

SC-13.01 Supplement Paragraph 13.01.B.5.c.(2) by adding the following sentence:

The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work

provisions of this Contract is the most current edition of Rental Rate Blue Book for Construction Equipment

13.02 *Allowances*

SC-13.02.C – Delete paragraph in its entirety and insert “Deleted”.

13.03 *Unit Price Work*

SC-13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the extended price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than fifteen (15) percent from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor’s unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor’s costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item that exceed 115% of the bid quantity.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

No suggested Supplementary Conditions in this Article.

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 *Progress Payments*

SC-15.01.B.4 – Add the following language at the end of paragraph:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage or invest the retainage for the benefit of the Contractor.

SC-15.01.D.1 – Delete paragraph in its entirety and insert the following in its place:

The Application for Payment with Engineer’s recommendations will be presented to the Owner and Agency for consideration. If both the Owner and Agency find the Application for Payment acceptable, the recommended amount less any reduction under the provisions of

Paragraph 15.01.E will become due twenty (20) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

SC-15.01 Add the following new Paragraph 15.01.F:

- F. For contracts in which the Contract Price is based on the Cost of Work, if Owner determines that progress payments made to date substantially exceed the actual progress of the Work (as measured by reference to the Schedule of Values), or present a potential conflict with the Guaranteed Maximum Price, then Owner may require that Contractor prepare and submit a plan for the remaining anticipated Applications for Payment that will bring payments and progress into closer alignment and take into account the Guaranteed Maximum Price (if any), through reductions in billings, increases in retainage, or other equitable measures. Owner will review the plan, discuss any necessary modifications, and implement the plan as modified for all remaining Applications for Payment.

15.02 *Contractor's Warranty of Title*

SC-15.02.A – Amend paragraph by striking out the following text: “7 days after” and insert “no later than the time of payment by Owner.”

15.03 *Substantial Completion*

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No Supplementary Conditions in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

17.02 *Arbitration*

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

17.02 *Arbitration*

- A. All matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC-17.02). Any controversy or claim in the amount of \$100,000 or less will be settled in accordance with the American Arbitration Association’s supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.

- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.
- C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.
- D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.
- E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.
- F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.
- G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;
 - 3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and
 - 4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.

- H. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

ARTICLE 18—MISCELLANEOUS

No suggested Supplementary Conditions in this Article.

SECTION 01063
BOROUGH OF NAUGATUCK GENERAL REQUIREMENTS

PART I – GENERAL

The Contractor shall conform to all general requirements as herein specified.

1) Scope of Work

A. Furnish all labor, materials, equipment, and incidentals for modifications to the sewer collection system and associated work complete and fully functional as indicated on the Drawings and specified herein, including:

1. Light and heavy cleaning of sewer pipes and manholes.
2. CCTV of sewer pipes.
3. Sewer pipe lining.
4. Sewer pipe point repairs.
5. Modifications of manhole structures.
6. Sewer manhole wall and corbel lining.
7. Manhole riser seal and invert reconstruction.

B. The Work includes, but is not necessarily limited to, the following items:

1. Maintenance and protection of traffic including detours.
2. Temporary bypassing of existing sewer flows.
3. Erosion and sedimentation controls installation, maintenance and removal.
4. Dewatering.
5. Replace and restore disturbed pavement surfaces, curbing, utilities and other amenities disturbed by pipe and manhole work.
6. Coordination of the work with the Owner and/or their representative.

C. The work shall also conform to such additional Drawings and addenda to these Specifications and Drawings as may be published or exhibited prior to the opening of bid proposals and to such drawings in explanation of details, or as may be furnished by the Engineer from time to time during the construction.

- D. Work and materials which are necessary in the construction, but which are not specifically referred to in the Specification, or shown on the Drawings, but implied by the Contract shall be furnished by the Contractor at their own cost and expense and shall be such as will correspond with the general character of the work as may be determined by the Engineer, whose decisions as to the necessity for and character of such work and materials shall be final and conclusive. It is the intent of these Specifications to produce a complete, operational, and finished project whether shown in every detail or not.
- E. The Borough reserves the right to decrease the Scope of Work to be done under this Contract, select bid or alternate items in its best interest, or to omit any work in order to bring the cost within available funds. Exercise by the Borough of the above rights shall not constitute any grounds or basis of claim for damages or for anticipated profits on work omitted.

2. Standards

Wherever reference is made in this Contract to the Standard of any technical society or other recognized organization, these shall be construed to mean the latest standard adopted and published at the date of advertisement for bids.

Abbreviations are defined as follows:

- ASTM -- American Society of Testing and Materials.
- ANSI -- American National Standards Institute
- ASA -- American Standards Association
- ACI -- American Concrete Institute
- AASHTO -- American Association of State Highway and Transportation Officials
- ASME -- American Society of Mechanical Town of Deep River Borough Inspectors
- IEEE -- Institute of Electrical and Electronics Engineers
- AWWA-- American Water Works Association
- ACPA-- American Concrete Pipe Association

3. Contract Drawings and Working Drawings

The work is shown on the accompanying Contract Drawings. Such additional working drawings, as required because of changes or to provide greater detail, will be provided by the Engineer.

4. Alterations

The Engineer may make alterations to the line, grade, plan, form, dimensions, or materials of the work, or any part thereof, either before or after the commencement of the work. If such alterations increase the quantity of work, such increase will be paid for according to the quantity of such extra work actually done and at the prices stipulated for such work under unit price Items of the Contract. In case no unit price is applicable, the alterations will be paid for as extra work defined in Article XXVIII

of the Contract.

5. Planimeter

The use of the planimeter shall be considered satisfactory for estimating quantities where geometric and analytic methods would be comparatively laborious.

6. Contractor's Schedule of Operations

The Contractor shall submit, within ten (10) days of the date of the Notice to Award, a preliminary schedule of operations for the project to the Borough Inspector for approval. The approved preliminary schedule shall be used to prepare a detailed schedule of the principal construction events including all proposed purchase and delivery dates for items with critical delivery times. A supplemental bar graph shall also be prepared based on this construction schedule. The detailed schedule and supplemental bar graph shall be submitted within ten (10) days of the date of the Notice to Proceed.

The status of the project shall be evaluated monthly by the Contractor and shall be compared to the original schedule which shall be revised, if necessary, and reissued.

7. Coordination with Other Contractors and Utilities

During the progress of the work, other contractors and/or utilities may be engaged in performing work in the area. The Contractor shall coordinate the work to be done under this Contract with the work of others.

8. Cost Breakdown

Prior to the first estimate for payment to the Contractor, the Contractor shall submit to the Engineer for approval a detailed cost breakdown of the various amounts to be paid for within each Lump Sum Item, as applicable. It shall also include, but not necessarily be limited to, proportional amounts for bonds, insurance and miscellaneous works which are to be paid for throughout the life of the Contract, and which are not specifically included for payment under other Items and/or Division of the Contract.

9. Estimated Quantities

To aid the Borough Inspector in determining quantities to be paid for, the Contractor shall, whenever requested, give the Borough Inspector access to the proper invoices, bills of lading, or other pertinent documents and shall provide methods and assistance necessary for weighing or measuring materials.

10. Payment for Miscellaneous Work

No direct payment will be made to the Contractor for furnishing and providing miscellaneous temporary works, plants, and services, including Contractor's office,

sanitary requirements, water supply, power, tools, equipment, lighting, telephone systems, store houses, store yards, safety devices, permits, insurances, bonds, watchmen, cleanup and the like, or other items specified under these General Requirements, unless payment therefore has been specifically provided. Compensation for the same is understood to be included in the scheduled prices hereinbefore given for the various kinds of work contemplated.

11. Drawings and Information to be furnished by the Contractor

For materials and equipment not supplied by the Owner, the Contractor shall promptly furnish to the Engineer, for their information, three (3) copies of drawings in detail of the materials, equipment, piping, and structural details for any part of the work for which Drawings are not to be issued by the Borough Inspector. Before placing orders for any manufactured item or part of structure, they shall also submit three (3) copies, for approval, of detailed lists and descriptions of the various materials, fixtures, fittings and supplies which they propose to use in the work, and also the names of individuals or companies who propose to furnish or manufacture the same. Copies of the results of all tests of materials and equipment shall be furnished by the Contractor immediately following the performance of required tests.

Prior to the submittal of shop drawings, the Contractor shall check, approve, initial and date the drawings and shall also indicate by reference the Standard Specification, Special Provision and/or Plan which covers the item. Submittals will be returned to the Contractor if they have not been properly processed by them.

Approval by the Borough Inspector of shop drawings for any material, apparatus, device and layout shall not relieve the Contractor from the responsibility of furnishing same of proper dimension, size, quality, quantity and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. Approval shall not relieve the Contractor from the responsibility for errors of any sort on the shop drawings. If the shop drawings deviate from the Contract Documents, the Contractor shall advise the Borough Inspector of the deviations in writing, including the reasons for the deviation.

In the event the Contractor obtains the Engineer's approval for the material, manufactured items, or equipment, other than that which is shown on the Plans or specified herein, the Contractor shall, at their own expense, make any changes as required in the structures, buildings, piping, or any other portion of the work necessary to accommodate the approved material, manufactured item, or equipment.

12. Substitution Clause

Whenever in the Contract Documents any item of equipment or material is designated by reference to a particular brand, manufacturer or trade name, it is understood that an approved equal product, acceptable to the Borough Inspector, may be substituted by the Contractor, except where expressly noted as "no substitutions."

13. Contract Limits

The Contractor shall confine their activities to within street lines, easements, and right-of-way.

The Contractor shall take particular care to existing walls, protect trees and shrubs and private personal property. The Contractor shall make good any damage to the satisfaction of the Borough Inspector.

The Contractor shall not enter upon or make use of any private property along the line of work, outside the limits of the rights-of -way, except when written permission is secured from the owner of said property and a copy delivered to the Borough Inspector.

The Contractor shall be held responsible for all damages or injury, done by the Contractor or those in the Contractor's employment, to any private or public property of any character during the prosecution of the work. The Contractor shall restore or repair at their own expense, in a manner satisfactory to the Borough Inspector, such property as may be damaged by their operations during the prosecution of the work.

In case of failure on the part of the Contractor to restore or repair such property in a manner satisfactory to the Owner, the Owner may, upon 48-hour notice to the Contractor, proceed with such restoration or repair. The expense of such restoration or repair shall be deducted from any monies which are due or may become due the Contractor under this Contract.

14. Work in Easements and Protection of Private Property

The Contractor shall take particular care to avoid damages to all private property and to private improvements within the Borough's right of way. They shall make good any damages to the satisfaction of the Borough of Naugatuck. There shall be no additional compensation for the repair or restoration of private property, or private improvements within the Borough's right of way.

Easements for sanitary sewer are assumed to be 20-feet wide, 10-feet off center from the sewer pipe. Provide notification to property owners at least 72 hours prior to work in easements.

Notification flyers shall be posted by the Contractor at each property affected at least 48 hours prior to commencement of work on that property. Submit example property owner notification form/flyer to the Engineer for approval. Information shall include, at minimum: description of work, note that access to private property is required, expected dates, times, and duration of work affecting the property owner, and at least two (2) Contractor phone numbers for the property owner to contact in case of emergency.

15. Cleaning up the Site

During the progress of the work, the Contractor shall keep the construction areas in a neat condition, free from accumulations of waste materials and rubbish. Lunch papers, bottles, lumber cut-offs, drinking cups and like rubbish shall be removed from the site daily. No alcoholic beverages will be permitted at the construction site(s).

On, or before the completion of the work, and before acceptance and final payment shall be made, the Contractor shall clean and remove, from the site and adjacent property all surplus and discarded materials, rubbish, and temporary structures and restore, in an acceptable manner, all property and leave the whole area in a neat and presentable condition.

16. Staging and Laydown Areas

The Contractor shall submit to the Engineer for review and approval any areas they intend to use or staging and laydown. In addition to review and approval by the Engineer, potential sites to be obtained by the Contractor from private owners must be submitted to the Borough for approval. The Contractor must submit verification of approval by the property owner to the Engineer prior to use.

17. Storage of Materials

Materials shall be stored so as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms and covered or stored in a suitable building, as directed by the Borough Inspector. Stored materials shall be located so as to facilitate prompt inspections.

Materials and equipment supplied by the Owner shall be jointly inspected by the Owner and the Contractor and shall, upon acceptance by the Contractor, become the Contractor's responsibility to make good any damage to the materials and equipment until they have been incorporated and accepted in the work.

18. Removal of Condemned Materials

The Contractor shall remove from the site of the work, without delay, all rejected and condemned materials of any kind brought to or incorporated in the work. No such rejected or condemned materials shall again be offered for use by the Contractor.

19. Hauling Materials

Before starting any work, the Contractor shall arrange, with the Municipal or State officials having jurisdiction, for the use of routes of travel for hauling materials, including surplus earth and rock, that will result in minimum inconvenience to the traveling public. Routes of travel so scheduled shall be adhered to throughout the course of the work, unless otherwise approved.

20. Accommodation of Traffic

During the progress of the work, all streets shall be kept open for the passage of traffic and pedestrians and shall not be obstructed unless authorized by the authority having jurisdiction over same. Driveways, sidewalks, and areas of roadway shall be closed as short a time as possible while work is in progress and passage shall be restored by the close of work every day, by properly placed backfill or approved bridging. The Contractor shall notify residents prior to working in front of their home or business. The Contractor shall take such measures at their own expense as may be necessary to keep the street open for traffic and shall give advance notice to the Fire and Police Departments, and the Board of Education of their proposed street operations. They further agree to be responsible for all legal notices to the public concerning the state of the roads while the work is in progress.

Warning signs shall be provided along all streets while work is in progress and, where traffic direction is required. Uniformed Borough of Naugatuck police officers for traffic control shall be paid for under the allowance item Contract price. Officers shall be designated by the Contractor to direct traffic past the equipment, machinery, or construction operations. Barricades and lights shall be provided as required to protect life and property. Where trenches have been cut in streets on which traffic may pass at times, warning signs shall be placed at frequent intervals and maintained until the street is safe for travel. All such work and operations shall be in accordance with requirements of the Owner, Standard Specifications and provisions herein. The use of unauthorized or unapproved signs, barricades, or traffic delineators will not be permitted.

The Contractor shall construct, maintain, without extra compensation, such adequate and proper bridges over excavations as may be necessary or directed for the purpose of accommodating pedestrians and vehicles. Ingress and egress to private property, satisfactory to the Borough Inspector, shall be continuously provided.

Should the Contractor or their employees neglect to set out and maintain barricades or lights, as required in the Specifications, the Borough Inspector may immediately and without notice arrange for furnishing, installing and maintaining barricades or lights and any other precaution deemed necessary. The cost thereof shall be borne by the Contractor and may be deducted from any amount due or to become due to the Contractor under this Contract.

The Contractor is required to delineate any raised structures within the travel lanes, so that the structures are visible day and night, unless there are specific Contract plans and provisions to temporarily lower these structures prior to the completion of work.

The Contractor shall be held responsible for any damages that may have to be paid as a consequence of the Contractor's failure to protect the public.

21. Temporary Roads and Driveways

The Contractor shall be responsible for providing and maintaining such temporary

access roads, to and along right-of-way. Where temporary roads, necessary for the transportation of materials and equipment are on private property, the Contractor shall obtain permission from the property owners and the Borough for their construction and use and pay all costs pertaining thereto.

22. Dust Control

The Contractor shall take all necessary precautions to prevent and abate nuisance caused by dust arising from their operations. Approved methods applicable to various parts of the work, such as sweeping application of water spray or calcium chloride, shall be employed. This also applies to maintaining temporary paving nuisance-free until permanent paving is placed. The area of construction along roadways shall be broom swept each day after completion of the day's work and the application of water as necessary, all at no additional cost to the owner.

23. Working Conditions

In prosecuting the work of this Contract, the Contractor shall provide working conditions on each operation that shall be as safe and healthful as the nature of the operation permits. The Contractor shall comply with all safety and sanitary rules, laws and regulations.

24. Work in Inclement Weather

During freezing, storm or inclement weather, no work shall be performed except such as can be done satisfactorily and in such manner as to secure first-class construction throughout.

25. Working Hours

The Contractor's working schedule shall be confined to a five (5) day week, Monday through Friday, and the working day shall be confined between the hours of 7:00 a.m. and 5:00 p.m. current local time, unless otherwise approved by the Engineer.

Unless otherwise permitted by the Borough Inspector, no work shall be done between the hours of 5:00 p.m. and 7:00 a.m. except as necessary for the proper care and protection of the work already performed. If it shall become absolutely necessary to perform work at night, this shall be approved by the Borough Inspector at least 24 hours in advance, of the beginning of the performance of such work. Only such work shall be done at night as can be done satisfactorily and in a first-class manner. Good lighting and all other necessary facilities for carrying out and inspecting the work shall be provided and maintained at all points where such work is being done.

26. Emergency Work

The Contractor shall file, with the Borough of Naugatuck Engineer, the name and telephone number of a person authorized by them who may be contacted regarding emergency works at the job site that may be required during non-working hours for reasons of public safety.

This person shall be readily available and full Authority to deal with any emergency that may occur.

27. Sedimentation and Erosion Control

The Contractor shall prepare and submit for approval a sedimentation and erosion control plan for the work, prior to the start of construction.

28. Work Near Brook(s) and Stream(s)

Care shall be taken to prevent, or reduce to a minimum, any damage to any water body from pollution by debris, sedimentation, or other material, or from manipulations of equipment and/or materials near such water bodies and on abutting property. Particular care shall be taken to prevent gasoline, diesel fuel, and other oils from entering any water body.

29. Work Within or Near Areas Designated as Inland Wetlands

Care shall be taken to prevent, or reduce to a minimum, any damage to any inland wetland from pollution by debris, sedimentation, or other material, or from manipulations of equipment and/or materials near such water bodies and on abutting property. Particular care shall be taken to prevent gasoline, diesel fuel, and other oils from entering any inland wetland.

30. Soil and Groundwater Conditions

The Owner assumes no responsibility whatsoever with respect to ascertaining for the Contractor such facts concerning physical characteristics at the site of the project. The Contractor agrees that they will make no claim for and has no right to additional payment for extension of time for completion of the work, or any other concession because of any interpretations or misunderstanding on their part of this Contract, or because of any failure on their part to fully acquaint themselves with all conditions relating to the work.

31. General Sanitary Requirements

Operation of the sewer collection system must be maintained throughout the duration of the project. The Contractor shall develop a sequence of construction and submit it to the Engineer for review. The proposed sequence shall be in accordance with the approved schedule submitted by the Contractor. Sanitary sewer and manhole rehabilitation must be in accordance with the Special Provisions and Borough of Naugatuck Standards.

32. Water Supply and Electrical Energy

Contractor to supply all water and electrical energy required to perform the work at no additional expense to the Owner.

33. Sheeting, Shoring, and Bracing

Where necessary, the sides of trenches and excavations shall be supported by adequate sheeting, shoring and bracing. The Contractor shall be held accountable and responsible for the sufficiency of all sheeting, shoring and bracing used and for all damage to persons or property resulting from the improper quality, strength, placing maintaining or removing of the same. Where sheeting is removed, care shall be taken not to disturb the new work or existing utilities and structures. The Contractor shall adhere to all OSHA standards and requirements pertaining to the work.

No sheeting is to be left in place unless expressly permitted by the Engineer. No direct payment will be made for sheeting, shoring, and bracing and compensation for such work and all expenses incidental thereto shall be considered as included in the unit prices bid for the various Items of this Contract.

34. Existing Structures

All known surface and underground structures, except electric and telephone service connections, and water, gas and sewer service pipes, on or immediately adjacent to the work, are shown on the Plans. Sewer, drainage, water and gas mains, manholes and similar structures located in or adjacent to the location of the structures included in this Contract, are shown on the Contract Drawings, which locations should be considered approximate. This information is shown for the convenience of the Contractor in accordance with the best information available, but is not guaranteed to be correct or complete. The Contractor shall explore the route ahead of trenching and shall uncover all known obstructing pipes sufficiently to determine their location. Necessary changes in location may be made by the Engineer to avoid unanticipated obstructions.

Wherever water or gas mains, electric or telephone ducts, or electric or telephone poles are encountered and may be in any way interfered with, the Contractor shall keep the utility company involved fully informed in advance. The Contractor shall cooperate with the utility company in the protection, removal, relocation and replacement of such structures.

The Contractor shall, at their own expense, sustain in their places and protect from direct or indirect injury all utilities, pipes, poles, conduit, walls, buildings and other structures and property in the vicinity of their work, and they shall be responsible for all damage and assume all expense for direct or indirect injury caused by their work to any of them or to any person or property by reason of injury to them.

Guard rails, posts, guard cables, signs, poles, markers, mailboxes, fences, walls and stone walls, and other private improvements, which are temporarily removed, damaged or destroyed during construction, shall be replaced and restored to a condition as good as or better than existed and to the satisfaction of the Owner or Borough Inspector.

The Contractor shall, at their own expense, retain the services of a licensed surveyor to replace property markers, on or adjacent to privately owned property, which have been disturbed during the course of construction.

35. Marking New Underground Facilities

All new underground facilities shall be marked with warning tape in accordance with State of Connecticut Public Act 16-345 and DPUC Regulations.

36. Operation of Water Valves

Unless otherwise permitted, existing water valves shall not be operated by the Contractor. Whenever the operation of a water valve is necessary, the Contractor shall make arrangements, at least 24 hours in advance of the need, to have the Owner's forces perform the required operations. Contractor must prepare and distribute customer notices to all affected customers at least 24 hours prior to any shutdown of service.

37. Testing Laboratories

The Borough of Naugatuck Borough Inspector shall appoint an independent testing laboratory for all material testing in accordance with the Standard Specifications, which shall be paid for through the project's incidental allowance. The Borough Inspector, in coordination with the Contractor, shall provide material samples to the laboratory, as required, throughout the duration of the project.

38. Wage Rates

The wages paid on an hourly basis to any mechanic, laborer, or workman employed upon the work herein contracted to be done, and amount of payment or contribution paid or payable on behalf of each such employee to any employee welfare fund, as defined in Section 31-53 of the General Statutes, shall be at a rate equal to the rate customary or prevailing for the same work in the same trade or occupation in the Town in which such public works project is being constructed. Any Contractor who is not obligated by agreement to make payment or contribution, on behalf of such employee welfare fund, shall pay to each employee, as part of their wages, the amount of payment or contribution for their classification on each pay day.

The Contractor shall comply with all Connecticut General Statutes pertaining to the payment of prevailing wages. The Contractor shall provide to the Borough weekly certified payrolls of their employees and any subcontractors employed on the work.

END OF SECTION 01063

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SECTION 01150

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Under the price specified to be paid for each item, the Contractor shall furnish all materials and equipment, furnish all labor, and plant, and perform all operations to complete all work as indicated and specified. Provide all supervision, overhead items, protection and precautions, and all other costs, incidental to the construction work, complete, and as specified, are also included.
- B. A complete, finished, working job, as intended by the general nature of these Specifications, shall be produced whether or not any particular wording or direction is omitted or inadvertently not clearly stated.
- C. Measurement for payment shall be by the Engineer, except where noted elsewhere in this specification. Measurement for payment for lump sum items shall be on the basis of percentage of work complete.
- D. Each unit or lump sum price stated in the Bid shall constitute full compensation as herein specified for each item of work completed in accordance with the Drawings and Specifications.
- E. The prices for those items that involve excavation shall include compensation for clearing and grubbing, excavation, backfill, compaction, dust control, excavation support systems, dewatering, stockpiling, removal of excess material, and restoration of disturbed areas.
- F. The prices for all pipe items shall constitute full compensation for pipe, stone bedding, laying, jointing, and testing of pipe, trench excavation, providing supplemental gravel, backfilling using gravel borrow, compaction, providing impervious membranes to protect trench and stockpiles, turf establishment and clean up.
- G. In all items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price thereof shall be in addition to the cost of excavating earth, and no deduction will be made in the amount for earth excavation.
- H. Landscaping and reestablishment of vegetated areas shall not be measured separately for payment but shall be included in the general cost of the contract and the various items of work.

- I. Clearing and grubbing shall not be measured separately for payment, but shall be included in the general cost of the contract and the various items of work.
- J. Unit prices submitted for various items of work will be utilized for determining prices of any additional work necessary during construction.
- K. If such alterations increase the quantity of work, such increase will be paid for according to the quantity of such extra work actually done and at the prices stipulated for such work under unit price Items of the Contract. In case no unit price is applicable, the alterations will be paid for as extra work defined in Article XXVIII of the Contract.

1.2 ITEM DESCRIPTIONS

Item 1, Erosion and Sedimentation Control

- 1. Under the lump sum price bid, the Contractor shall furnish all plant, labor, equipment, appurtenances, and materials to control soil erosion and sedimentation as specified. The lump sum price shall include, but not be limited to full compensation for all labor, equipment and services involved in furnishing, maintaining, and removing all systems as shown on the plans or as directed by the Engineer.
- 2. Measurement for payment shall be on the basis of percentage of work completed as measured by the Engineer.

Item 2, Exploratory Excavation (Test Pits)

- 1. Under the unit price bid, the Contractor shall furnish all plant, labor, equipment, appurtenances, and materials to excavate and backfill as shown and as directed to locate pipe, utilities, and possible obstructions.
- 2. The complete construction also includes saw-cutting pavement, clearing and grubbing, excavation, backfill using excavated materials and gravel as indicated, compaction, dewatering, temporary excavation support systems, digging test pits, coordination with utility companies, protection of utilities, temporary pavement repairs, removing unsuitable and excess material from the job, restoration of disturbed areas, clean up and all other appurtenant materials and work incidental thereto and not specifically included for payment under other items.
- 2. Measurement for payment will be based on the actual cubic yards of material excavated, as approved by the Engineer prior to the work.

Item 3 Investigative CCTV Sanitary Sewer Inspection (As Directed)

1. Under the unit price bid, the Contractor shall furnish and perform closed-circuit television survey 6-inch to 12-inch diameter sanitary sewer pipe as specified on the plans and as directed by the Engineer. The unit price includes pre-cleaning (up to three passes), NASCCO PACP inspections, and submittal of inspection findings. If additional cleaning is necessary and approved by the Engineer, this will be paid for under Item 9. All observations and pipe defects will be recorded in an electronic database in NASCCO PACP format with report, digital pictures, and digital movie clips for each line segment. All digital recordings and logs shall be provided to the Engineer upon completion of the work for review and analysis of rehabilitation.
2. Measurement for this item shall be based on the actual length of sewer pipeline cleaned and CCTV'd from centerline of manhole to centerline of manhole. Verification of adequate cleaning shall be made by CCTV inspection.
3. Measurement for payment will be by the linear foot of pipe inspected as measured by the Engineer along the horizontal projection of the centerline of the inspected pipe.
4. Special Note: This item is exclusive of pre-CCTV in Items 4 through 7.
5. Contractor shall require written authorization from the Engineer (or Resident Project Representative) prior to using these items.

Item 4, Cured-in-Place Pipe Lining 6-inch Sanitary Sewer

Item 5, Cured-in-Place Pipe Lining 8-inch Sanitary Sewer

Item 6, Cured-in-Place Pipe Lining 10-inch Sanitary Sewer

Item 7, Cured-in-Place Pipe Lining 12-inch Sanitary Sewer

6. Under the unit price bid, the Contractor shall furnish and install structural CIPP lining as specified on the plans or as directed by the Engineer. The unit price includes pre-cleaning (up to three passes) and CCTV of each pipe not performed during investigative CCTV inspections, bypassing and maintaining existing flows, cutting of all protruding service connections, dewatering, using a tapered liner if required, hydrophilic water stops, grout sealing laterals, reinstating service connections, pre and post rehabilitation cleaning and NASCCO PACP inspections of rehabilitated pipe, sample testing and acceptance, and dewatering, complete.

7. All observations and pipe defects will be recorded in an electronic database in NASSCO PACP format with report, digital pictures and digital movie clips for each line segment. All digital recordings and logs shall be provided to the Owner upon completion of the project.
8. Measurement for payment will be by the liner foot of pipe lined as measured by the Engineer along the horizontal projection of the centerline of the lined pipe.
9. Cured-In-Place Pipe lining installed but not successfully tested and accepted shall be paid for at a maximum of 95 percent of the unit prices bid under this item. The remaining 5 percent shall be paid upon receipt of successful test results by the Engineer. All reductions in payment due to unsuccessful testing shall be made prior to normal retainage.

Item 8, Sanitary Sewer Excavated Point Repair (As Directed)

1. Under the unit price bid, the Contractor shall furnish and install PVC pipe and fittings of less than or equal to 15-inch diameter, and no deeper than 15 feet, in locations and lengths not shown on the plans but as directed by the Engineer. The unit price will constitute full compensation for constructing the pipe complete; including installing pipe and fittings, making connections to existing pipe and structures, making connections to lateral services, maintaining existing flows, completion of successful testing of completed sewer, removal and disposal and/or abandonment of existing pipe, fittings, and structures within and outside of trench limits and as indicated.
2. The complete construction also includes but is not limited to permanent pavement replacement, clearing and grubbing, tree removal, excavation, backfill using approved excavated material supplemented with gravel borrow as indicated, stone bedding, geotextile filter fabric, compaction, dewatering, temporary excavation support systems, test pits, protection of utilities, repair and/or relocation of any utility lines broken and/or conflicting with construction, removing unsuitable and excess material from the job, restoration of disturbed areas, plantings, clean up and all other appurtenant materials and work incidental thereto and not specifically included for payment under other items.
3. The complete construction also includes temporary pavement, replacement of disturbed curbing, sidewalks, and driveways to match existing, and replacement of pavement markings as shown on the plans and as directed by the Engineer.
1. Measurement for payment will be by the linear foot of pipe installed as measured by the Engineer along the horizontal projection of the centerline of the newly installed pipe. Contractor shall require written au

thorization from the Engineer (or Resident Project Representative) prior to using this item.

Item 9, Heavy Cleaning of Sanitary Sewer Lines 6” – 15” (As Directed)

2. Payment for heavy cleaning (defined as four or more jetter passes and/or the use of mechanical cleaning equipment) shall be based on the unit price bid for this item in the proposal.
3. Included in the unit price bid for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals associated with the heavy cleaning necessary as indicated by CCTV inspection or as directed by the Engineer, in accordance with the Specifications. The digital video recordings and digital data logs, by-pass pumping, plugging or blocking of flow, mechanical root removal, grease removal, and the storage and proper disposal of any material retrieved from sewer cleaning shall be considered part of the work and shall not be considered for separate payment. All digital recordings and logs shall be provided to the Owner upon completion of the project.
4. CCTV inspection and light pipeline cleaning (three or less jetter passes) shall be considered incidental to the cured-in-place pipeline installation, and therefore, shall not be paid for under this unit price bid item.
5. Measurement for this item shall be based on the actual length of sewer pipeline cleaned from centerline of manhole to centerline of manhole. Verification of adequate cleaning shall be made by CCTV inspection.
6. Contractor shall require written authorization from the Engineer (or Resident Project Representative) prior to using this item.

Item 10, Replace Manhole Frame and Cover

1. Under the unit price bid, the Contractor shall furnish and install frames and covers of types specified on plans and specifications. The unit price bid will constitute full compensation for furnishing new structures and disposing of existing structures; setting frame and cover in bituminous concrete as needed; manhole cover gaskets; clean up; replacing deteriorated bricks beneath the frame and adjusting and raising frames to grade using a maximum of four (4) courses of brick, anything further will constitute a rebuilt riser.

The complete construction also includes but is not limited to permanent pavement replacement, excavation, backfill using approved excavated material supplemented with gravel borrow as indicated, stone bedding, geotextile filter fabric where specified, compaction, dewatering,

temporary excavation support systems, protection of utilities, repair and/or relocation of any utility lines broken and/or conflicting with construction, removing unsuitable and excess material from the job, restoration of disturbed areas, plantings, clean up and all other appurtenant materials and work incidental thereto and not specifically included for payment under other items.

The complete construction also includes temporary pavement as directed by the Engineer, replacement of disturbed curbing, sidewalks, and driveways to match existing, and replacement of pavement markings to match existing.

2. Measurement for payment will be for each frame and cover installed.

Item 11, Cementitious Lining of Manhole Corbel, Walls & Base

1. Payment for the Cementitious Lining of a Manhole shall be based on the unit price bid for this item in the proposal. Under the unit price for this item, the Contractor shall furnish all labor, materials, tools, equipment, and incidentals required to perform structural manhole rehabilitation, complete, as shown on the Contract Drawings, as specified and/or at the direction of the Engineer.
2. The complete construction also includes bypassing and maintaining existing flows, acrylamide grout sealing or plugging of active leaks and patching.
3. The work includes, but is not limited to the following: providing access and subsequent restoration for the rehabilitation operation; pre-and post-rehabilitation CCTV, photos and other assessment; removal and legal disposal of manhole rungs as needed to perform the cementitious lining work; prepare surfaces for rehabilitation in accordance with manufacturers instruction including cleaning, scrubbing, power washing, sand blasting, grouting, spot repair, elimination of infiltration sources, and all other surface preparation; protection of pipe and structure components to remain un-rehabilitated; performing manhole interior sealing to eliminate all leaks; performing repairs to the brick channels and benches as may be identified during the assessment; performing cementitious coating to all interior manhole surfaces from the bench to the bottom of the frame, including around pipe connections; local flow handling not included elsewhere and as required to complete the work; and performing visual testing, exfiltration testing and adherence testing as specified.
4. Additional manhole repair work, including, raising manholes to grade, manhole chimney sealing; retrofitting underdrain manholes and modifying internal drop manholes shall be paid for under other unit price

bid items specified elsewhere in this Specification.

5. Measurement for payment for this item shall be the vertical distance as measured from the manhole bench at the wall to underside of the manhole frame, for each manhole lined and successfully tested, as measured by the Engineer.

Item 12, Seal Manhole Riser

1. Under the unit price bid, the Contractor shall furnish and install specified sealant in manhole risers as indicated and as directed. The unit price bid will constitute full compensation for all labor, equipment and materials necessary to prepare surfaces and install sealing materials. The complete construction includes maintaining existing flows.
2. Measurement for payment will be for each manhole with sealant installed.

Item 13, Rebuild Manhole Risers

1. Under the unit price bid, the Contractor shall rebuild manhole risers within an existing manhole as indicated and as directed. The unit price bid will constitute full compensation for all labor, equipment and materials necessary to prepare and reconstruct the riser inside a manhole. This includes a minimum of 4 courses and a maximum of 9 courses of brick. The completed construction also includes bypassing and maintaining existing flows.
2. Measurement for payment will be for each rebuilt manhole riser.

Item 14, Rebuild Manhole Brick Bench & Inverts

1. Under the unit price bid, the Contractor shall rebuild manhole bench and inverts within an existing manhole as indicated and as directed. The unit price bid will constitute full compensation for all labor, equipment and materials necessary to prepare and reconstruct the table and inverts inside a manhole. The completed construction also includes bypassing and maintaining existing flows.
2. Measurement for payment will be for each manhole repaired.

Item 15, Raise Manhole to Grade

1. Under this allowance, the Contractor shall uncover buried manhole covers and raise to grade as necessary to complete the work and as directed by the Engineer. The allowance will be paid on a time and material basis for all labor, equipment and materials necessary to

prepare, raise cover and frame, and provide temporary paving around raised manhole cover.

2. Measurement for payment will be as approved by the Owner.

Item 16, Additional Permanent Pavement Repair (As Directed)

1. Under the unit price bid, the Contractor shall furnish all plant, labor, equipment, appurtenances and materials to place a permanent pavement repair in paved section of roadway as shown on the plans. The unit price bid will constitute full compensation for sawcutting or trimming of pavement, preparation of the subgrade, installation of the base and/or subbase materials, any base removal or additional excavation required to maintain repairs, disposal of unsuitable materials, dust control, pavement markings and all other appurtenant materials and work incidental thereto and not specifically included for payment under other items.
2. Measurement for payment will be the number of square yards of the item completed and accepted at specified depths and payment limits as indicated on the Drawings. Any pavements that during the course of construction are damaged by negligent operations of the Contractor shall not be measured for payment, but repaired by the Contractor at their own expense as directed by the Engineer.
3. Temporary pavement repairs placed as indicated on the plans and as directed will not be measured for payment, but shall be included under the general cost of the contract and the various items of work.

Item 17, Gravel Borrow (As Directed)

1. Under the unit price bid, the Contractor shall furnish all plant, labor, equipment, appurtenances and materials to place gravel (in addition to the existing reclaimed material) to ensure sufficient material exists to construct the roadway base course to the limits as shown on the plans. The unit price bid will constitute full compensation for placing the gravel, including dust control, compaction, compaction testing, and preparation of existing subbase.
2. Measurement for payment will be on the basis of cubic yards of gravel base completed and accepted in place as measured by the Engineer. Gravel used in other items of work including but not limited to driveways, pavement repairs, and pipe items will not be measured for payment under this item, but shall be included in the unit prices for the other items of work.

Item 18, Removal of Unsuitable Material Below Bedding (As Directed)

1. Under the unit price bid, the Contractor shall furnish all plant, labor, equipment, appurtenances and materials to remove peat or other unsuitable material below the pipe or manhole bedding as approved by the Engineer. The unit price will constitute full compensation for performing all required excavations, including load, transport, and disposal of such material away from the job; furnishing and placing crushed stone in the place of material removed, and all other appurtenant materials and work incidental thereto and not specifically included for payment under other items.
2. Measurement for payment will be on the basis of cubic yards of unsuitable material excavated. The depth of unsuitable material in pipe trenches will be measured from the bottom of normal bedding to the depth of replacement. The maximum allowable depth of replacement shall be 12 inches. The allowable width of unsuitable material shall be limited to the trench width limits as shown on the plans.

Item 19, Mobilization & Demobilization

1. Under the lump sum price bid, the Contractor shall furnish all plant, labor, equipment, appurtenances and materials to move equipment to the site and prepare to begin construction. It shall also include payment for removal of some equipment at the completion of the project.

Mobilization costs are the costs of initiating the Contract, exclusive of the cost of materials.

2. Payment for mobilization will be at the lump sum price bid for this item and will be limited to 75% of the lump sum amount of this item until the work is complete and the contractor has completely demobilized. The initial payment of 75% mobilization costs shall be payable when the Contractor is operational on site. Operational shall mean the substantial commencement of work on site, not prior to commencement. The lump sum price bid for mobilization shall not exceed 5 percent of the total of all items excluding this item.

Item 20, Maintenance & Protection of Traffic

1. Under the lump sum price bid, the Contractor shall furnish all plant, labor, equipment, appurtenances and materials to control traffic as specified. The lump sum price shall include, but not be limited to full compensation for all labor, equipment and services involved in erection, maintenance, moving, adjusting, cleaning, relocating, and storing of steel plates, signs, barricades, drums, traffic cones and delineators furnished by the Contractor as well as all costs of labor and equipment involved in

the maintenance of traffic lanes and detours maintenance of traffic as directed and approved by the Borough. The lump sum price shall also include the cost of furnishing the aforementioned steel plates, signs, barricades, warning lights, drums, traffic cones and delineators.

2. The Contractor shall coordinate traffic control requirements with the Borough on a daily basis throughout the course of the work. The lump sum price included the cost for coordinating traffic control requirements and scheduling uniformed police for traffic control.
3. Measurement for payment shall be on the basis of percentage of work completed, inspected and accepted by the Engineer.

Item 21, Uniformed Police or Certified Flaggers for Traffic Control

1. Under this allowance, the Contractor will be responsible for coordinating and providing for police details when required by the Borough. The Contractor shall maintain and protect the traffic throughout the entire duration of the Contract. No claim for additional payment due to unusual construction conditions encountered or delay caused by the Contractor or other outside agencies shall be considered.
2. Payment for uniformed police or certified flaggers shall be made for expenses billed to the Contractor by the Police Department or certified flaggers in the normal course of providing supervision for traffic control during construction operations.
3. Uniformed police and police car fees, when required by the Police Department, or certified flaggers shall be paid under the allowance stated in the Bid. The allowance stated in the Bid is approximate, and the actual amount to be paid may be more or less, but shall match the actual amount paid to the Police Department or the certified flaggers as authorized by the Engineer.
4. The Contractor shall record the actual amount paid for uniformed police or certified flaggers and, at the end of each month, Contractor shall submit the total amount paid during the month, in four copies, to the Engineer, who will review such amounts, when verified, in monthly payment requests from the Contractor to the Owner.
5. If the uniformed police or certified flaggers expenses are greater than the stated allowance, the Contractor shall be reimbursed the difference in the actual costs as billed. Any unexpended amount shall remain with the Owner as a credit on the total base bid.
6. No mark-up for uniformed police or certified flaggers shall be allowed.

Only documented invoice amounts shall be reimbursed to the Contractor.

7. No payment will be allowed for police details or certified flaggers ordered but not utilized due to the Contractor's cancellation of work activities without appropriate advance notification to the Police Department in accordance with the requirements of the Police Department or certified flagger's.
8. No payment will be allowed for uniformed police or certified flagger's required due to the Contractor's failure to furnish and maintain traffic control measures including but not limited to project signage, barriers, and warning devices in accordance with the Specifications and the Contractor's Traffic Control Plan, as approved by the Engineer.
9. The Contractor shall coordinate with the Borough's Department of Public Works, Police Department and the Engineer to determine daily uniformed police detail or certified flagger requirements. No payment will be allowed for uniformed police details or certified flaggers ordered without such coordination.

END OF SECTION 01150

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SECTION 02010

SUBSURFACE INVESTIGATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. The Contractor acknowledges satisfaction as to the nature and location of the work, the general and local conditions, particularly those bearing upon transportation, disposal, handling, and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, groundwater table or similar physical conditions at the site, the conformation of subsurface materials to be encountered, the character of equipment and facilities needed prior to and during the prosecution of the work and all other matters which can in any way affect the work or the cost thereof under this Contract. Any failure by the Contractor to acquaint himself with all available information concerning these conditions will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the work.

- B. Related sections include the following:

- 1. Section 02210 – Earth Excavation, Backfill, Fill and Grading

1.3 SUBSURFACE DATA

- A. Re-use of excavated soils on- or off-site is subject to local, state and federal regulations and as specified in section 02210 – EARTH EXCAVATION, BACKFILL, FILL AND GRADING. The Contractor's attention is specifically directed to state regulations set forth in 310 CMR 40.0032 which stipulate the re-use of soil containing oil or hazardous materials at concentrations less than a release notification threshold. Such soils are not to be re-used in locations where existing concentrations of oil or hazardous materials at the receiving site are significantly lower than the levels of oil and hazardous materials in the soils being disposed or re-used.
- B. Since individual disposal facilities will have different permit conditions and specific pre-characterization data requirements, the Contractor shall be responsible for final waste characterization prior to transport and disposal. The Contractor is hereby made aware that for the purposes of disposal, final

waste characterization testing is the responsibility of the Contractor, and costs for characterization shall be incorporated into the Contractor's bid price.

- C. Additional subsurface investigation as may be warranted to satisfy a disposal facility's data requirements shall be the responsibility of the Contractor. Subsurface investigation activities shall not commence without a written work plan detailing the Contractor's approach for obtaining additional data is approved by the Engineer's Licensed Site Professional. The work plan must indicate the location and frequency of sampling; sampling parameters and sampling methodology. The Contractor shall allow a minimum of 14 days for review and comment.
- D. Contractor is responsible for securing a suitable area for staging excavated soils in accordance with technical specifications and local, state, and federal regulations.

END OF SECTION 02010

SECTION 02050

DEMOLITION AND ALTERATIONS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes the following:
 - 1. Demolish and alter existing facilities as indicated on drawings, as specified, and as directed by Engineer.
 - 2. Remove, salvage, or otherwise dispose of minor site improvements as specified in Section 02100, Site Preparation.
- B. Related sections include the following:
 - 1. Section 02100 - Site Preparation
 - 2. Section 02210 - Earth Excavation, Backfill, Fill and Grading.

1.3 SUBMITTALS

- A. Shop Drawings: Submit the following in accordance with Section 01300 - SUBMITTAL PROCEDURES:
 - 1. Submit to Engineer for review, a demolition plan describing proposed sequence, methods, and equipment for demolition and disposal of each structure.

1.4 QUALITY ASSURANCE

- A. Provide in accordance with Section 01400 and as specified.
- B. Demolish and remove existing construction, utilities, equipment, and appurtenances without damaging integrity of existing structures, equipment, and appurtenances that are to remain.
- C. Store equipment to be salvaged for relocation where directed by Engineer, and if necessary, protect from damage during work.

- D. Repair or remove items that are damaged. Repair and re-install damaged items at no additional compensation and to condition at least equal to that which existed prior to start of work.
- E. Exercise all precautions for fire prevention. Make acceptable fire extinguishers available at all times in areas where demolition work by burning torches is being done. Do not burn demolition debris on or near site.
- F. Protect persons and property throughout progress of work. Proceed in such manner as to minimize spread of dust and flying particles and to provide safe working conditions for personnel.
- G. Maintain circulation of traffic within area at all times during demolition operations.
- H. Obtain permission from Engineer before abandoning or removing any existing structures, materials, equipment and appurtenances.
- I. Make arrangements with and perform work required by utility companies and municipal departments for discontinuance or interruption of utility services due to demolition work.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REFERENCES

- A. Provide three reference points for each survey marker and monument removed, established by a licensed civil engineer or land surveyor and record locations and designations of survey markers and monuments prior to removal.
- B. Store removed markers and monuments during demolition work, and replace upon completion of work. Reestablish survey markers and monuments in conformance with recorded reference points. Forward letter to Engineer signed by licensed civil engineer or land surveyor verifying reestablishment of survey markers and monuments.
- C. Confine apparatus, storage of materials, demolition work, new construction, and operations of workmen to areas that will not interfere with continued use and operation of entire facility. Provide and maintain lights, barriers, and temporary passageways for free and safe access.

- D. Wet down work during demolition operations to prevent dust from arising. Provide maximum practicable protection from inclement weather for materials, equipment, and personnel located in partially dismantled structures. Provide shoring or bracing where necessary to prevent settlement or displacement of existing or new structures.
- E. Cap or plug with brick and mortar, as indicated, pipes and other conduits abandoned due to demolition.

3.2 SALVAGE

- A. All existing utilities and structures removed by the Contractor shall remain the property of the utility owner and shall be made available at the Owner's request. Materials, equipment, and appurtenances removed, that are not requested by the Owner, shall become property of the Contractor. The Contractor shall haul from site and dispose of at no additional compensation.
- B. Salvage fire hydrants for future use by Owner. Store in vicinity of original location and place so as not to interfere with construction.

3.3 CONTRACT CLOSEOUT

- A. Provide in accordance with Section 01700.

END OF SECTION 02050

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SECTION 02140

DEWATERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes the following:

1. Design, furnish, operate, maintain, and remove temporary dewatering systems to control groundwater and surface water to maintain stable, undisturbed subgrades, and permit work to be performed under dry and stable conditions. Work to be done as part of dewatering includes, but is not limited to:
 - a. Lower the groundwater level.
 - b. Lower hydrostatic pressure.
 - c. Prevent surface water from entering the excavation during construction.
 - d. Implement erosion control measures for disposing of discharge water.
2. Groundwater within the excavation area shall be lowered to at least 2 feet below the lowest excavation levels.
3. Common dewatering methods include, but are not limited to, sump pumping, deep wells, well points, vacuum well points or any combinations thereof.

- B. Related sections include the following:

1. Section 02160 - Temporary Excavation Support Systems
3. Section 02210 - Earth Excavation, Backfill, Fill, and Grading

1.3 SUBMITTALS

- A. For informational purposes only, and if requested by the Engineer, the Contractor shall submit the following prior to the start of the work:
1. Submit a dewatering plan at least two (2) weeks prior to start of any dewatering operation. Do not submit design calculations. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum:
 - a. Dewatering plan and details stamped and signed by a Registered Professional Engineer.
 - b. Certificate of Design.
 - c. A list of equipment including, but not limited to, pumps, prime movers, and standby equipment.
 - d. Detailed description of dewatering, maintenance, and system removal procedures.
 - e. Erosion/sedimentation control measures, and methods of disposal of pumped water.
 - f. List of all applicable laws, regulations, rules, and codes to which dewatering design conforms.
 2. A modified dewatering plan within 24 hours, if open pumping from sumps and ditches results in boils, loss of fines or softening of the ground.

1.4 QUALITY ASSURANCE

- A. If subgrade soils are disturbed or become unstable due to dewatering operation or an inadequate dewatering system, notify the Engineer, stabilize the subgrade, and modify system to perform as specified at no additional cost to the Owner.
- B. Notify the Engineer immediately if any settlement or movement is detected on structures. If the settlement or movement is deemed by the Engineer to be related to the dewatering, take actions to protect the adjacent structures and submit a modified dewatering plan to the Engineer within 24 hours. Implement the modified plan and repair any damage incurred to the adjacent structures at no additional cost to the Owner.

- D. If oil and/or other hazardous materials are encountered after dewatering begins, immediately notify the Engineer.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with the General Requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Provide casings, well screens, piping, fittings, pumps, power and other items required for dewatering system.
- B. Provide sand and gravel filter around the well screen. Wrapping geotextile fabric directly around the well screen shall not be allowed.
- C. When deep wells, well points, or vacuum well points are used, provide pumping units capable of maintaining high vacuum and handling large volumes of air and water at the same time.
- D. Provide and store auxiliary dewatering equipment, consisting of pumps and hoses on the site in the event of breakdown, at least one (1) pump for every five (5) used.
- E. Provide and maintain erosion/sedimentation control devices as indicated or specified and in accordance with the dewatering plan.
- F. Provide temporary pipes, hoses, flumes, or channels for the transport of discharge water to the discharge location.
- G. Provide cement grout having a water cement ratio of 1 to 1 by volume.

PART 3 - EXECUTION

3.1 EXECUTION

- A. Execution of any earth excavation, installing earth retention systems, and dewatering shall not commence until the related submittals have been reviewed by the Engineer with all Engineer's comments satisfactorily addressed and the geotechnical instrumentation has been installed.
- B. Furnish, install and maintain dewatering system in accordance with the dewatering plan.

- C. Carry out dewatering program in such a manner as to prevent undermining or disturbing foundations of existing structures or of work ongoing or previously completed.
- D. Do not excavate until the dewatering system is operational.
- E. Unless otherwise specified, continue dewatering uninterrupted until all structures, pipes, and appurtenances below groundwater level have been completed such that they will not be floated or otherwise damaged by an increase in groundwater elevation.
- F. Discontinue open pumping from sumps and ditches if such pumping is resulting in boils, loss of fines, softening of the ground, or instability of the slopes. Modify dewatering plan and submit to the Engineer at no additional cost to the Owner.
- G. Where subgrade materials are disturbed or become unstable due to dewatering operations, remove and replace the materials in accordance with Section 02210 at no additional cost to the Owner.
- H. Dewatering Discharge:
 - 1. Install and monitor recharge systems when specified and/or indicated and in accordance with the submitted dewatering plan.
 - 2. Install sand and gravel filters in conjunction with well points and deep wells to prevent the migration of fines from the existing soil during the dewatering operation.
 - 3. Transport pumped or drained water to discharge location without interference to other work, damage to pavement, other surfaces, or property.
 - 4. Provide separately controllable pumping lines.
 - 5. The Engineer reserves the right to sample discharge water at any time.
 - 6. Immediately notify the Engineer if suspected contaminated groundwater is encountered. Do not pump water found to be contaminated with oil or other hazardous material to the discharge locations.
- I. Install and maintain erosion/sedimentation control devices at the point of discharge as indicated or specified and in accordance with the dewatering plan.

J. Removal:

1. Do not remove dewatering system without written approval from the Engineer.
2. Backfill and compact sumps or ditches with screened gravel or crushed stone wrapped with geotextile fabric in accordance with Section 02210.
3. All dewatering wells shall be abandoned upon completion of the work, and completely backfilled with cement grout.

END OF SECTION 02140

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SECTION 02160

TEMPORARY EXCAVATION SUPPORT SYSTEMS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract apply to this Section.

1.2 SUMMARY

- A. This section includes the following:

1. **The requirements of this section apply to the use of a trench box and any other support systems that may become necessary during construction.** The Contractor shall reference the trench detail as shown on the Drawings. The Contractor shall be solely responsible for making all excavations in a safe manner. All excavation, trenching, and related sheeting, bracing, etc. shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P) and State requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.
2. Design, furnish and install temporary excavation support systems as required to maintain lateral support, prevent loss of ground, limit soil movements to acceptable limits and protect from damage existing and proposed improvements including, but not limited to, pipelines, utilities, structures, roadways, and other facilities.
3. Common types of excavation support systems include, but are not limited to, singular or multiple stages comprised of cantilevered or internally braced soldier piles and lagging, steel sheet pile wall, timber sheet pile wall, trench box, or combinations thereof. Trench box temporary excavation support system is only acceptable for pipe or utility trench excavations. Temporary unsupported open cut excavation with stable sloping sides is not allowed for this project.
4. Wherever the word "sheeting" is used in this section or on the contract drawings, it shall be in reference to any type of excavation support system specified except trench box.
5. Construction of the temporary excavation support systems shall not disturb the existing structures or the completed proposed structures. Damage to such structures shall be repaired by the Contractor at no additional cost to the Owner.

6. The Contractor shall bear the entire cost and responsibility of correcting any failure, damages, subsidence, upheaval or cave-ins as a result of improper installation, maintenance or design of the temporary excavation support systems. The Contractor shall pay for all claims, costs and damages that arise as a result of the work performed at no additional cost to the Owner.

B. Related sections include the following:

1. Section 02210: Earth Excavation, Backfill, Fill, and Grading
2. Section 02140: Dewatering
3. Section 03346: Cast-in-Place Concrete

1.3 SUBMITTALS

A. Excavation and Excavation Support Plan: For informational purposes only, the Contractor shall submit the following prior to the start of the work, in accordance with the General Requirements of the Contract Documents:

1. Submit within a minimum of one (1) week prior to construction, the qualifications of the Contractor's excavation support specialist. The excavation support specialist shall have completed at least five (5) successful excavation support projects of equal size and complexity and with equal systems within the last five (5) years.
2. Submit a detailed temporary excavation support plan stamped and signed by a Professional Engineer licensed in the State of Connecticut at least two weeks prior to start of the construction. Do not submit design calculations. The review will be only for the information of the Owner and third parties for an overall understanding of the project relating to access, maintenance of existing facilities and proper utilization of the site. The Contractor shall remain responsible for the adequacy and safety of the means, methods and sequencing of construction. The plan shall include the following items as a minimum:
 - a. Proposed temporary excavation support system(s), details, location, layout, depths, extent of different types of support relative to existing features and the permanent structures to be constructed, and methods and sequence of installation and removal.
 - b. Certificate of Design.
 - d. Requirements of dewatering during the construction.

- e. Minimum lateral distance from the edge of the excavation support system for use for vehicles, construction equipment, and stockpiled construction and excavated materials.
 - f. List of equipment used for installing the excavation support systems.
3. Submit a Construction Contingency Plan specifying the methods and procedures to maintain temporary excavation support system stability if the allowable movement of the adjacent ground and adjacent structures is exceeded.

1.4 QUALITY ASSURANCE

- A. Conform to the requirements of the OSHA Standards and Interpretations: "Part 1926 Subpart P - Excavation, Trenching, and Shoring", and all other applicable laws, regulations, rules, and codes.
- B. All welding shall be performed in accordance with AWS D1.1.
- C. Prepare design, including calculations and drawings, under the direction of a Professional Engineer registered in the state where the project is located and having the following qualifications:
 - 1. Not less than ten (10) years experience in the design of specific temporary excavation support systems to be used.
 - 2. Completed not less than five (5) successful temporary excavation support system projects of equal type, size, and complexity within the last five (5) years.
- D. Temporary Excavation Support System Installer's Qualifications:
 - 1. Not less than three (3) year experience in the installation of similar types and equal complexity as the proposed system.
 - 2. Completed not less than three (3) successful excavation support systems of similar type and equal complexity as the proposed system.
- E.
- F. Install all temporary excavation support systems under the supervision of a supervisor having the following qualifications:
 - 1. Not less than five (5) years experience in installation of systems of similar type and equal complexity as the proposed system.

2. Completed at least five (5) successful temporary excavation support systems of similar type and equal complexity as the proposed system.

1.5 DESIGN CRITERIA

- A. Design of temporary excavation support systems shall meet the following minimum requirements:
 1. Support systems shall be designed for earth pressures, hydrostatic pressure, equipment, temporary stockpiles, construction loads, and other surcharge loads.
 2. Design a bracing system to provide sufficient reaction to maintain stability.
 3. Limit movement of ground adjacent to the excavation support system to be within the allowable ground deformation as specified.
 4. Design the embedment depth below bottom of excavation to minimize lateral and vertical earth movements and provide bottom stability. Toe of braced temporary excavation support systems shall not be less than 5 feet below the bottom of the excavation.
 5. Design temporary excavation support systems to withstand an additional 2 feet of excavation below proposed bottom of excavation without redesign except for the addition of lagging and/or bracing.
 6. Maximum width of pipe trench excavation shall be as indicated on the drawings.
 7. Do not cast permanent structure walls directly against excavation support walls.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Store sheeting and bracing materials to prevent sagging which would produce permanent deformation. Keep concentrated loads which occur during stacking or lifting below the level which would produce permanent deformation of the material.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Structural Steel: All soldier piles, wales, rakers, struts, wedges, plates, waterstop and accessory steel shapes shall conform to ASTM A36.

- B. Steel Sheet Piling: ASTM A328, continuous interlocking type.
- C. Timber Lagging Left in Place: Pressured treated per appropriate AWPA standards.
- D. Tieback Tendons: Tieback tendons shall be high strength steel wire strand cables conforming to ASTM A416, or bars conforming to ASTM A722. Splicing of individual cables shall not be permitted.
- E. Raker Ties: ASTM A615 Grade 60.
- F. Cement Grout Materials And Admixtures For Tieback Anchorages: Grout cube strength shall be a minimum 3500 psi at 7 days and 5000 psi at 28 days.
- G. Concrete: Section 03346.
- H. Tamping tools adapted for backfilling voids after removal of the excavation support system.
- I. Provide specific trench box sizes for each pipe and utility excavation with structural capacity of retaining soil types as described in OSHA's 29 CFR Part 1926 Subpart P.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation of the temporary excavation support systems shall not commence until the related earth excavation and dewatering submittals have been reviewed by the Engineer with all Engineer's comments satisfactorily addressed.
- B. Install excavation support systems in accordance with the temporary excavation support plan.
- C. Do not drive sheeting within 100 feet of concrete less than seven (7) days old.
- D. Carry out program of temporary excavation support in such a manner as to prevent undermining or disturbing foundations of existing structures of work ongoing or previously completed.
- E. Bottom of the trench box excavation support system shall be above the pipe invert prior to installing the pipe.

- F. Install and read geotechnical instrumentation in accordance with the temporary excavation support plan. Notify the Engineer immediately if any geotechnical instrumentation is damaged. Repair or replace damaged geotechnical instrumentation at the sole option of the Engineer and at no additional cost to the Owner.
- G. Continuously monitor movements of the ground adjacent to excavation support systems and adjacent structures. In events of the measured movements approaching or exceeding the allowable movements, take immediate steps to arrest further movement by revising procedures such as providing supplementary bracing, filling voids behind the trench box, supporting utilities or other measures (Construction Contingency Plan) as required.
- H. Notify utility owners if existing utilities interfere with the temporary excavation support system. Modify the existing utility with the utility owner's permission or have the utility owner make the modifications at no additional cost to Owner.

3.2 REMOVAL OF EARTH RETENTION SYSTEM

- A. Sheet piling shall be left in place unless otherwise indicated or approved in writing by the Engineer.
- B. When indicated or approved by the Engineer, remove the temporary excavation support system without endangering the constructed or adjacent structures, utilities, or property. Immediately backfill all voids left or caused by withdrawal of temporary excavation support systems with bank-run gravel, screened gravel or select borrow by tamping with tools specifically adapted for that purpose.
- C. When tiebacks are used, release tension in tiebacks as the excavation is backfilled. Do not leave tensioned tieback in place at the completion of the work.
- D. The excavation support system left-in-place shall be cut-off a minimum of 2 feet below the bottom of the next higher foundation level or a minimum of 5 feet below finished grade.
- E. Conduct survey of the locations and final cut-off elevations of the excavation support systems left in place.
- F. Submit as-built information, prior to backfilling.

END OF SECTION 02160

SECTION 02210

EARTH EXCAVATION, BACKFILL, FILL AND GRADING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Perform the following earth excavation, backfill, fill and grading as indicated or specified:
 - 1. Make excavations to accommodate piping, conduits, foundations, and other structures.
 - 2. Provide materials for backfilling excavations as indicated and specified.
 - 3. Grade surfaces to meet finished grades indicated.
 - 4. Immediately notify the Engineer if suspected hazardous materials are encountered and cease operations in that part of work.
 - 5. Remove, transport, and dispose of surplus or unsuitable excavated material.
- B. Related sections include the following:
 - 1. Section 02140 - Dewatering
 - 2. Section 02160 - Temporary Excavation Support Systems
 - 3. Section 02229 – Controlled Density Fill
 - 4. Section 03346 - Cast-in-Place Concrete

1.3 DEFINITIONS

- A. Percentage of compaction is defined as the ratio of the field dry density, as determined by ASTM D1556 or ASTM D2922 to the maximum dry density determined by ASTM D1557 Procedure C, multiplied by 100.

- B. Proof Roll: Compaction with a minimum of 4 passes of a vibratory steel drum or rubber tire roller. Vibratory plate compactors shall be used in small areas where vibratory steel drum or rubber tire roller cannot be used.
- C. Acceptable Material: Material which does not contain organic silt or organic clay, peat, vegetation, wood or roots, stones, or rock fragments over 8-inch in diameter, porous biodegradable matter, loose or soft fill, excavated pavement, construction debris, or refuse. Stones or rock fragments shall not exceed 40 percent by weight of the backfill material.
- D. Unacceptable Materials: Materials that do not comply with the requirements for the acceptable material or which cannot be compacted to the specified or indicated density.

1.4 SUBMITTALS

- A. Shop Drawings: Submit the following in accordance with the General Requirements of the Contract Documents.

1.5 QUALITY ASSURANCE AND CONTROL

- A. Dewatering and Groundwater Control: Provide and maintain as specified in Section 02140.
- C. Excavations shall be performed in the dry, and kept free from standing water, snow and ice during construction. Bedding and backfill material shall not be placed in water. Water shall not be allowed to rise upon, or flow over, the bedding and backfill material.
- D. Temporary Excavation Support Systems: Provide and maintain as specified in Section 02160.
- E. The Contractor shall be solely responsible for making all excavations in a safe manner. All excavation, trenching, and related sheeting, bracing, etc. shall comply with the requirements of OSHA excavation safety standards (29 CFR Part 1926 Subpart P) and State requirements. Where conflict between OSHA and State regulations exists, the more stringent requirements shall apply.
- F. Do not excavate, construct embankments, or fill until all the required submittals have been reviewed by the Engineer.
- G. Formulate excavation, backfilling, and filling schedule and procedures to eliminate possibility of undermining or disturbing foundations of partially and completed structures, pipelines and embankments or existing structures and pipelines.

- H. Construction Tolerances:
1. Construct finished surfaces to plus or minus 1 inch of the elevations indicated.
 2. Grade cut and fill areas to plus or minus 0.20 foot of the grades indicated.
 3. Complete embankment edges to plus or minus 6 inches of the slope lines indicated.
 4. Provide the Engineer with adequate survey information to verify compliance with above tolerances.
- I. Cut pavement with a saw or pneumatic tools to prevent damage to remaining pavement without extra compensation. Where pavement is removed in large pieces, dispose of pieces before proceeding with excavation.
- J. Pipes, drains, and other utilities may exist in certain locations not indicated on drawings. No attempt has been made to show all services. Completeness or accuracy of information given is not guaranteed.
- K. Dig test pits considered as incidental to the normal excavation as required to locate underground utilities, obstructions or water table.
- L. Carefully support and protect from damage, existing wells, pipes, poles, wires, fences, curbing, property line markers, and other structures, which the Engineer determines must be preserved in place without being temporarily or permanently relocated. Should such items be damaged, restore without compensation therefor, to at least as good condition as that in which they were found immediately before the work was begun.
- M. Restore existing property or structures as promptly as practicable.
- N. If material unacceptable for foundation support (in the opinion of the Engineer) is found at or below the grade to which excavation would normally be carried in accordance with the drawings and/or specifications, remove such material to the required width and depth as directed by the Engineer and replace it with crushed stone.
- O. Do not remove excavated materials from the site of the work or dispose of except as directed or approved by the Engineer.
- P. Haul away and dispose of surplus excavated materials at locations directed by the Engineer at no additional cost to the Owner.
- Q. During progress of work, conduct earth moving operations and maintain work site to minimize the creation and dispersion of dust. Furnish and spread

calcium chloride if the Engineer decides that it is necessary for more effective dust control.

- R. Provide suitable and safe bridges and other crossings where required for accommodation of travel, and to provide access to private property during construction, and remove said structures thereafter.

PART 2 - PRODUCTS

2.1 BACKFILL MATERIALS

- A. Use only acceptable materials from excavations or borrows, as determined by the Engineer.

- B. **Controlled Density Fill (CDF):**

- 1. Controlled density fill shall be flowable, excavatable and shall require no vibration for placement. Compressive strength at 28 days shall be 30 to 80 psi and the slump shall be 10 to 12 inches. See Section 02229 Controlled Density Fill

- C. **Gravel Borrow:**

- 1. Gravel borrow shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings, deleterious materials and other fine or harmful substances. The gravel borrow shall be graded as indicated below:

Sieve Size Designation	Percent Passing by Weight Square Mesh Sieves
1/2-inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

- D. **Processed Gravel for Subbase:**

- 1. Gravel subbase shall consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. The gravel subbase shall be used in the upper trench backfill material immediately below pavements and graded as indicated below:

Sieve Size Designation	Percent Passing by Weight Square Mesh Sieves
3-inch	100
1-1/2-inch	70-100
1/4-inch	50-85
No. 4	30-60
No. 200	0-10

D. Crushed Stone:

- Crushed stone shall consist of durable crushed rock or durable crushed gravel stone, free from ice and snow, sand, clay, loam, or other deleterious or organic material. Crushed stone may be used as pipe bedding and initial backfill under culverts, support of sewer and drainage structures, as a working mat or as a filter around perforated drainpipe. Crushed stone shall be wrapped in filter fabric, placed in maximum 6-inch thick layers, loose measure, and compacted with a minimum of four (4) passes of a vibratory plate or roller compactor. The crushed stone shall be uniformly blended and shall conform to the following:

Sieve Size Designation	Percent Passing by Weight Square Mesh Sieves
1-inch	100
3/4-inch	90-100
5/8-inch	---
1/2-inch	10-50
3/8-inch	0-20
No. 4	0-5
No. 8	---

E. Filter Fabric:

- See Section 02273.

2.2 EQUIPMENT

- A. The compaction equipment shall be selected by the Contractor and shall be capable of consistently achieving the specified compaction requirements. The selected compaction equipment shall meet the following minimum requirements:
 - 1. Manually operated vibratory plate compactors weighing no less than 200 pounds with vibration frequency no less than 1600 cycles per minute.
 - 2. Vibratory steel drum or rubber tire roller weighing at least 12,000 pounds.
 - 3. Water jetting and puddling will not be allowed.

PART 3 - EXECUTION

3.1 SITE MAINTENANCE

- A. Roadway and Site Leveling: Grade roadway and site as to maintain them in a level unrutted condition and to eliminate puddling of surface and subsurface water.

3.2 EXCAVATION

- A. Execution of any earth excavation shall not commence until the related dewatering, excavation support systems, and required backfill and fill materials submittals are reviewed by the Engineer and all Engineer's comments satisfactorily addressed.
- B. Carry out program of excavation, dewatering, and excavation support systems to eliminate possibility of undermining or disturbing foundations of existing structures or of work previously completed under this contract.
- C. Excavate to widths that give suitable room for building structures or laying and jointing piping.
- D. Do not plow, scrape or dig by machinery near to finished subgrade in a manner that would result in disturbance of subgrade.
- E. Excavate to lines and grades indicated in an orderly and continuous program.
- F. Establish limits of excavation to allow adequate working space for installing forms and for safety of personnel.
- G. Excavate to elevations indicated, or deeper, as directed by the Engineer, to remove unacceptable subgrade material.

- H. Exercise care to preserve material below and beyond the lines of excavations.
- I. Boulders, rock fragments, and concrete less than one-half (0.5) cubic yard encountered during excavation shall not be included for payment as rock.
- J. Excavate for depressed foundations, where mat foundations are indicated as depressed. Sheet and shore existing ground so that adjacent sections of foundation mat will rest on undisturbed ground as indicated. Installation of sheeting shall be in accordance with Section 02160.

3.3 SEPARATION OF EXCAVATED MATERIALS FOR REUSE

- A. Only remove existing pavement that is necessary for prosecution of work.
- B. Carefully remove loam and topsoil from excavated areas. Store separately for further use or furnish equivalent loam and topsoil as directed.
- C. Carefully remove acceptable material from excavated areas and store separately for further use as backfill material.

3.4 TRENCH EXCAVATION

- A. When pipe is to be laid in bedding material or concrete cradle, excavate trench by machinery to, or just below, designated subgrade. If material remaining at bottom of trench is disturbed, recompaction shall be required.
- B. When pipe is to be laid directly on bottom of trench, do not excavate lower part of trenches by machinery to subgrade. Remove remainder of material to be excavated just before placing of pipe by use of hand tools. Form a flat or shaped bottom, true to grade, so pipe will have a uniform and continuous bearing. Support on firm and undisturbed material between joints, except for limited areas where use of pipe slings have disturbed bottom.

3.5 DEPTH OF TRENCH

- A. Excavate trenches to depths to permit pipe to be laid with backfill depths at elevations, slopes, or depths of cover indicated on drawings, and at uniform slopes between indicated elevations.

3.6 WIDTH OF TRENCH

- A. Make pipe trenches as narrow as practicable and do not widen by scraping or loosening materials from the sides. Make every effort to maintain sides of trenches firm and undisturbed until backfilling has been placed and compacted.

- B. Trench widths shall be as detailed on the drawings.

3.7 TRENCH EXCAVATION IN FILL

- A. Place and compact material per trench detail or as directed by engineer, when pipe is to be laid in embankment or other recently filled material. Take particular care to ensure maximum consolidation of material under pipe location. Excavate pipe trench as though in undisturbed material.

3.8 EXCAVATION NEAR EXISTING STRUCTURES

- A. Discontinue digging by machinery when excavation approaches pipes, conduits, or other underground structures. Continue excavation by use of hand tools. Include such manual excavation in work to be done when incidental to normal excavation and under items involving normal excavation.
- B. Excavate test pits when determination of exact location of pipe or other underground structure is necessary for doing work properly.

3.9 REMOVAL OF SUBSURFACE OBSTRUCTIONS

- A. Remove indicated subsurface structures and related obstructions to complete the work.
- B. Promptly notify the Engineer when any unexpected subsurface facilities are encountered during excavation such as utility lines and appurtenances, walls and foundations.

3.10 UNAUTHORIZED EXCAVATION

- A. When the bottom of any excavation for structures is taken out beyond limits indicated or specified, backfill, with screened gravel and crushed stone wrapped with non-woven geotextile fabric or with 1,500 psi (10 Mpa) concrete.

3.11 REUSE AND DISPOSAL OF SURPLUS EXCAVATED MATERIALS

- A. Reuse surplus acceptable excavated materials for backfill; deposit neatly and grade so as to make or widen fills, flatten side slopes, or fill depressions; or legally dispose off-site; all as directed or permitted and without additional compensation.

3.12 SUBGRADE PREPARATION AND PROTECTION

- A. Remove loam and topsoil, loose vegetable matter, stumps and large roots from areas upon which embankments will be built or material will be placed for grading. Shape subgrade as indicated on drawings, and prepare by forking, furrowing, or plowing so that the first layer of new material placed thereon will be well bonded to it.
- B. As directed by the Engineer, over-excavate unacceptable materials below the foundation subgrade. Backfill the over-excavation with compacted screened gravel or crushed stone wrapped with nonwoven geotextile fabric. In no case shall the screened gravel be placed directly on the exposed subgrade prior to placing the geotextile fabric.
- C. Proof roll the foundation subgrade prior to backfilling and filling operation, or placing foundation concrete.
- D. Proof roll the pipe trench foundation subgrade prior to backfilling and filling operation, or placing soil-supported pipeline.
- E. Utilize excavating equipment equipped with a toothless or smooth edged, excavating bucket to expose the pipe trench foundation subgrade to avoid disturbance of the bearing surface. Tamp the exposed subgrade with the excavating bucket prior to backfilling and filling operation, or placing soil-supported pipeline.

3.13 CARE AND RESTORATION OF PROPERTY

- A. Enclose uncut tree trunks adjacent to work in wooden boxes of such height as may be necessary for protection from injury from piled material, equipment, operations, or otherwise due to work. Operate excavating machinery and cranes of suitable type with care to prevent injury to trees not to be cut and particularly to overhanging branches and limbs.
- B. Cut all branches, limbs, and roots smoothly and neatly without splitting or crushing. Neatly trim, cut the injured portions and cover with an application of grafting wax or tree healing paint as directed by the Engineer.
- C. Protect cultivated hedges, shrubs, and plants which might be injured by the Contractor's operations by suitable means or dig up and temporarily replant and maintain. After construction operations have been substantially completed, replant in original positions and care for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to effect their growth or diminish in their beauty or usefulness, replace by items of equal kind and quality existing at the start of the work.

- D. Do not use or operate tractors, bulldozers, or other power-operated equipment on paved surfaces when their treads or wheels of which are so shaped as to cut or otherwise damage such surfaces.
- E. Restore surfaces damaged by the Contractor's operations to a condition at least equal to that in which they were found immediately before work commenced. Use suitable materials and methods for such restoration.

3.14 BACKFILLING - GENERAL

- A. Do not place frozen materials in backfill or place backfill upon frozen material. Remove previously frozen material or treat before new backfill is placed.
- B. Do not place, spread, roll or compact fill material during unfavorable weather conditions. If interrupted by heavy rain or other unfavorable conditions, do not resume until ascertaining that the moisture content and density of the previously placed soil are as specified.
- C. Do not use puddling, ponding, flooding or water jetting as a means of compaction.
- D. Reuse suitable excavated materials when performing backfill operations, at no additional cost to the Owner as specified in drawings.

3.15 MATERIAL PLACEMENT AND COMPACTION REQUIREMENTS

- A. Gravel borrow, processed gravel for subbase and acceptable materials for use as structural fill:
 - 1. Dump and spread in layers not to exceed 9-in. uncompacted thickness.
 - 2. Compact fill and backfill under structure, pavement and bedding for pipes (from below pipe to spring line) to not less than 95 percent maximum dry density.
- B. Crushed Stone:
 - 1. Dump and spread in layers not to exceed 4-in. uncompacted thickness.
 - 2. Compact using self-propelled vibratory steel drum or rubber tire rollers with a minimum of 4 passes in directions perpendicular to one another in open areas. In small areas, use manually operated vibratory plate compactors with a minimum of 4 passes.

- C. Gravel borrow and acceptable materials for use as non-structural fill:
 - 1. Dump and spread in layers not to exceed 12-in. uncompacted thickness.
 - 2. Compact to not less than 92 percent unless otherwise indicated.
- D. Backfilling and filling operation shall be suspended in areas where tests are being made until tests are completed and the testing laboratory has advised the Engineer that adequate densities are obtained.

3.16 STRUCTURAL FILL AND BACKFILL UNDER STRUCTURES

- A. Compact fill and backfill under structures and pavements with processed gravel for subbase, gravel borrow, and crushed stone as specified and indicated.

3.17 NON-STRUCTURAL BACKFILL AROUND STRUCTURES

- A. Use acceptable materials for non-structural backfill around structures and compacted as specified and indicated.
- B. Conduct hydraulic testing as soon as practicable after structures are constructed and other necessary work has been done. Start backfilling promptly after completion of tests.
- C. Deposit material evenly around structure to avoid unequal soil pressure.
- D. Do not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected, without distortion, cracking, or other damage.

3.18 BACKFILLING PIPE TRENCHES

- A. General:
 - 1. Begin backfilling and proceed until completed after: the pipes and conduits have been laid, and concrete or masonry structures within the trench have reached their design strength to support all loads.
 - 2. Backfill and compact indicated material under, around, and above pipes, conduits, and other structures to the indicated or specified compaction density requirement. Utilize compaction devices which will not damage the pipe, conduit, or structure within the trench.

3. Do not drop backfill material into trench from a height of more than 5 ft. or in a manner which will damage the pipe, conduit, or other structure within trench.

B. Pipe Trenches:

1. The trenches shall be backfilled as soon as practicable with the material specified herein. All trench backfilling shall be done with special care, in the following manner and as directed by the Engineer.
2. Pipe bedding shall be deposited in the trench, uniformly on both sides of the pipe, for the entire width of the trench to 2-feet above the pipe crown. The bedding shall be placed by hand shovels, in layers not more than 4-inches thick in loose depth, and each layer shall be thoroughly and evenly compacted with ram or pneumatic tamper to provide uniform support around the pipe, free from voids.
3. For trenches with a paved surface, the trench backfill shall be approved excavated material supplemented with gravel borrow as directed. The balance of backfill shall be spread in layers not exceeding 9-inches in loose depth. Each layer shall be thoroughly compacted by mechanical methods and shall contain no rock, stones or boulders larger than 6-inches in their greatest dimension. Place compacted processed gravel for subbase and bituminous concrete as specified on the drawings.
4. For trenches with an unpaved surface, the trench backfill shall be approved excavated material supplemented with gravel borrow as directed. The backfill shall be spread in layers not exceeding 12-inches in loose depth. Each layer shall be thoroughly compacted by mechanical methods and shall contain no rock, stones or boulders larger than 6-inches in their greatest dimension. Place 12-inches of compacted processed gravel for subbase to match surface grade as specified on the drawings.
5. For trenches with grass surface, the trench backfill shall be approved excavated material supplemented with gravel borrow as directed. The backfill shall be spread in layers not exceeding 12-inches in loose depth. Each layer shall be thoroughly compacted by mechanical methods and shall contain no rock, stones or boulders larger than 6-inches in their greatest dimension. Place 4-inches of compacted topsoil to match surface grade and establish turf as specified on the drawings.
6. All trench backfilling shall be done with special care and must be carefully placed so as not to disturb the work at any time; if necessary, a timber grillage or other suitable method shall be used to

break the fall of material. The moisture content of the backfill material shall be such that proper compaction will be obtained. Puddling or water jetting of backfill with water will not be permitted. Backfill within areas to receive topsoil or pavement construction shall be made to grades required to establish the proper subgrade for the placement of topsoil or pavement base courses.

7. In backfilling trenches, each layer of backfill material shall be moistened and compacted to a density as specified herein, and in such a manner as to permit the rolling and compaction of the filled trench or excavation with the adjoining earth to provide the required bearing value, so that paving of the excavated and disturbed areas, where required, can proceed immediately after backfilling is completed.
8. Any trenches or excavations improperly backfilled or where settlement occurs shall be reopened, to the depth required for proper compaction, then refilled and compacted with the surface restored to the required grade and condition, at no additional expense to the Owner.
9. During filling and backfilling operations, pipelines will be checked by the Engineer to determine whether any displacement of the pipe has occurred. If the observation of the pipelines shows poor alignment, displaced pipe or any other defects they shall be remedied in a manner satisfactory to the Engineer at no additional cost to the Owner.
10. Do not use mechanical compactors within a 12-inch layer above PVC pipe. Hand tamping only will be allowed.

3.19 MATERIAL FOR FILLING AND EMBANKMENTS

- A. Use acceptable materials for filling and building embankments unless otherwise indicated.

3.20 PLACING AND COMPACTING EMBANKMENT MATERIAL

- A. Compact fill material as specified and indicated.
- B. Perform fill operation in an orderly and systematic manner using equipment in proper sequence to meet the specified compaction requirements.
- C. Place fill on surfaces which are free of unacceptable materials.
- D. Begin filling in lowest section of work area. Grade surface of fill approximately horizontal but provide with sufficient longitudinal and transverse slope to allow for runoff of surface water from every point.

- E. Conduct filling so that no obstruction to drainage from other sections of fill area is created at any time.
- F. Install temporary dewatering sumps in low areas during filling operation where excessive amounts of rain runoff collect.
- G. Reduce moisture content of fill material in source area by working it over under warm and dry atmospheric conditions. A large disc harrow with two to three foot diameter disks may be required for working soil in a drying operation.
- H. Compact uniformly throughout. Keep surfaces of fill reasonably smooth and free from humps and hollows which would prevent proper and uniform compaction. Do not permit hauling equipment to follow a single track on the same layer but direct equipment to spread out to prevent over-compaction in localized areas. Take care in obtaining thorough compaction at edges of fill.
- I. Slightly slope surface of fill to ensure drainage during periods of wet weather. Do not place fill while rain is falling or after a rain-storm until the Engineer considers conditions satisfactory. During such periods and upon suspension of filling operations for any period in excess of 12 hours, roll smooth the surface of fill using a smooth wheel static roller to prevent excessive absorption of rainfall and surface moisture. Prior to resuming compaction operations, remove muddy material off surface to expose firm, compacted material, as determined by the Engineer.
- J. When fill is placed against an earlier fill or against in-situ material under and around structures, including around piping beneath structures or embankments, slope junction between two sections of fill, 1 vertical to 1.5 horizontal. Bench edge of existing fill 24-in. [60 cm] to form a serrated edge of compact stable material against which to place the new fill. Ensure that rolling extends over junction between fills.
- K. When fill is placed directly upon another older fill, clean surface thoroughly of debris and remove any loose material. Then proof roll the entire old surface.
- L. After spreading each loose lift to the required thickness and adjusting its moisture content as necessary, roll with sufficient number of passes to obtain the required compaction. One pass is defined as the required number of successive trips which by means of sufficient overlap will insure complete coverage and uniform compaction of an entire lift. Do not make additional passes until previous pass has been completed.
- M. In case material of any fill sinks and weaves under roller or under hauling units and other equipment, required degree of compaction is not being obtained. Reduce the moisture content. If such sinking and weaving

produces surface cracks, suspend operations on that part of the embankment until it becomes sufficiently stabilized. Ideal condition in fill is that attained when the entire fill below the surface being rolled is so firm and hard as to show only the slightest weaving and deflection as roller passes. Spread out rolling operations over the maximum practicable area to minimize condition of sinking and weaving.

- N. If because of defective workmanship, compaction obtained over any area is less than that required, remedy condition at no cost to Owner. If additional rolling or other means fail to produce satisfactory results, remove material in that area down to a level of satisfactory density. Perform removal, replacement, and rerolling without additional compensation.

3.21 COMPACTION CONTROL OF BACKFILL, FILL, AND EMBANKMENT

- A. Compact to density specified and indicated for various types of material. Control moisture content of material being placed as specified or if not specified, at a level slightly lower than optimum.
- B. The soil testing laboratory shall provide inspection during filling or backfilling operations to ensure compaction of screened gravel or crushed stone and record compaction equipment in use.
- C. Moisture control may be required either at the stockpile area, pits, or on embankment or backfill. Increase moisture content when material is too dry by sprinkling or other means of wetting uniformly. Reduce moisture content when material is too wet by using ditches, pumps, drainage wells, or other devices and by exposing the greatest possible area to sun and air in conjunction with harrowing, plowing, spreading of material or any other effective methods.

3.22 ALLOWANCE FOR SHRINKAGE

- A. Build embankments or backfill to a height above finished grade which will, in the opinion of the Engineer, allow for the shrinkage or consolidation of material. Initially, provide at all points, an excess of at least one percent of total height of backfill measured from stripped surface to top of finished surface.
- B. Supply specified materials and build up low places as directed, without additional cost if embankment or backfilling settles so as to be below the indicated level for proposed finished surface at any time before final acceptance of the work.

END OF SECTION 02210

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SECTION 02229

CONTROLLED DENSITY FILL (CDF)

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Furnishing and placing controlled density fill (CDF).

1.2 REFERENCE STANDARDS

A. ACI 229 - Controlled Low-Strength Materials (CLSM).

B. ASTM C150 - Portland Cement.

C. ASTM C231 - Air Content of Freshly Mixed Concrete by the Pressure Method.

1.3 SUBMITTALS

A. Submit the following data in accordance with Section 01300.

1. Name, address and telephone number of concrete supplier and batching plant.

2. Design mix.

PART 2 - PRODUCTS

2.1 CONTROLLED DENSITY FILL (CDF)

A. Controlled density fill (CDF) mix design requirements:

Portland Cement, Type II (ASTM C150)	150 lbs/yd ³
Sand, fine	2,900 lbs/yd ³
Water (potable)	401 lbs/yd ³
Air content	9±1%
Slump	6 inches
Concrete unit weight	127 lbs/ft ³
Minimum 28-day compressive strength	300 psi

B. The percentage of cement may be increased above these limits only when early strength is required, and future removal of the product is not required.

C. Adjust mix proportions for removability, pumpability, flowability and setting characteristics if acceptable to the Engineer.

D. Sand: 100% passing the 1/2-inch sieve.

PART 3 - EXECUTION

3.1 PLACEMENT

- A. Produce and deliver controlled density fill (CDF) using standard concrete construction equipment and practices. Place controlled density fill (CDF) by chute, pumping or other acceptable method.
- B. Discharge the controlled density fill (CDF) directly from the mixer truck into the space to be filled. No compaction or vibration of the material is required. The fill shall be placed in maximum lifts of 5 feet per 24 hours and must attain an initial set prior to placement of additional fill or concrete. Construct formed walls or other bulkheads to withstand hydrostatic pressure exerted by the controlled density fill (CDF). Curing of the controlled density fill (CDF) is not required.
- C. Do not place controlled density fill (CDF) on frozen ground. Mixing and placing of the material is acceptable in freezing temperatures. At the time of placement, the controlled density fill (CDF) shall have a minimum temperature of 40°F. When controlled density fill (CDF) is placed in freezing temperatures, cover the material with blankets overnight.

3.2 TESTING

- A. Test fill in accordance with ACI 229.
 - 1. Modified Slump Test:
 - a. Apparatus: Scoop, measuring tape, flat edge, 3" x 6" cylinder mold open at both ends, and a flat non-absorbent surface.
 - b. Procedure:
 - 1) Set mold upright on flat surface.
 - 2) Scoop representative sample of controlled density fill (CDF).
 - 3) Fill the mold with the sample without tamping and then strike off the top with flat edge to form flat surface.
 - 4) Clear any residue from around the bottom of the mold.
 - 5) Gradually lift the mold straight up over a period of 3 seconds allowing the sample to spread on the flat surface.
 - 6) Measure the diameter of the spread to the nearest 1/2-inch. A spread of 7-9 inches is considered flowable.
 - 2. Air Content: ASTM C231.

3.3 ACCEPTANCE

- A. The fill shall be left undisturbed until the material obtains sufficient strength to support the weight of foot traffic without apparent deformation. Sufficient strength for supporting vehicular traffic is 2.5 tons per square foot as measured by a pocket penetrometer.

END OF SECTION 02229

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SECTION 02273

GEOTEXTILE FABRIC

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Provide geotextile fabric in foundation preparation for separation of existing soil from screened gravel or crushed stone.
- B. Provide geotextile fabric for silt fence as indicated or specified.

1.2 RELATED WORK

- A. Section 02210: Earth Excavation, Backfill, Fill and Grading

1.3 QUALITY ASSURANCE

- A. General:
 - 1. Producer of geotextile fabric to maintain competent laboratory at point of manufacture to ensure quality control in accordance with ASTM testing procedures. Laboratory to maintain records of quality control results.
 - 2. Do not expose geotextile fabric, except the geotextile fabric for silt fence, to ultraviolet radiation (sunlight) for more than 14 days total in period of time following manufacture until geotextile fabric is installed and covered with fill or backfill material.
 - 3. Take all precautions to protect geotextile fabric from damage resulting from any cause. Either repair or replace geotextile fabric to Engineer's satisfaction at no additional cost to the Owner.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Provide geotextile fabric in rolls wrapped with protective covering to protect geotextile fabric from mud, dirt, dust, and debris. Label each roll of geotextile fabric with number or symbol to identify production run.
- B. Protect geotextile fabric from sunlight during transportation and storage. Do not leave geotextile fabric exposed to sunlight for more than two weeks during installation operations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Provide the following nonwoven geotextile fabric:
 - 1. Trevira 011/200 as manufactured by Hoechst Celanese Corp., Spartanburg, South Carolina.
 - 2. Mirafi 160N as manufactured by Mirafi, Pendergrass, GA.
 - 3. Amoco 4551 as manufactured by Amoco Fabrics and Fibers Co., Atlanta, GA.
 - 4. Or acceptable equivalent product.

- B. Provide the following woven geotextile fabric for silt fence:
 - 1. Amoco 2122 as manufactured by Amoco Fabrics and Fibers Co., Atlanta, GA.
 - 2. Mirafi 100X as manufactured by Mirafi, Pendergrass, GA.
 - 3. Geotex 910SC as manufactured by Synthetic Industry, Chattanooga, TN.
 - 4. Or acceptable equivalent product.

2.2 MATERIAL

- A. Geotextile fabric shall conform to test requirements for minimum average roll value (weakest principle direction) for strength properties of any individual roll tested from manufacturing lot or lots of particular shipment in excess of minimum average roll value (weakest principle direction) as specified hereafter.

- B. Physical Properties of Minimum Average Roll of the woven geotextile fabric for silt fence shall be:

Property	ASTM Test Method	Units	Value
1. Grab Strength	D4632	lbs [N]	120[450](min.)
2. Permittivity	D4491	sec -1	0.10 (min.)
3. Apparent Opening Size	D4751	Sieve Number	20-30
4. Ultraviolet Stability	D4355	Percent	70 (min.)

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install geotextile fabric in accordance with manufacturer's printed instructions.
- B. Place geotextile fabric on the foundation subgrade prior to placing the screened gravel or crushed stone.
- C. Overlap geotextile fabric 24 inches minimum for unsewn lap joint. Overlap fabric 6 inches at seam for sewn joint.
- D. Do not permit traffic or construction equipment to travel directly on geotextile fabric.
- E. Place geotextile fabric in relatively smooth condition to prevent tearing or puncturing. Lay geotextile fabric loosely but without wrinkles or creases so that placement of the backfill materials will not stretch or tear geotextile fabric. Leave sufficient slack in geotextile fabric around irregularities to allow for readjustments.
- F. Patch all tears in geotextile fabric by placing additional section of geotextile fabric over tear with a minimum of 3 feet [90 cm] overlay.
- G. Extend the geotextile fabric and wrap around the screened gravel or crushed stone along the perimeter of the foundation.
- H. Install silt fence in accordance with the manufacturer's printed instructions and as indicated.

END OF SECTION 02273

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SECTION 02498

RESTORATION OF DISTURBED AREAS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Provide all plant, labor, equipment, appliances and materials, and in performing all operations in connection with restoration to preconstruction conditions of all areas affected by work under this Contract, complete in accordance with the drawings and specifications.

1.3 GENERAL DESCRIPTION

- A. Remove and reset or replace all fencing, guardrails, trees, shrubs, lawns, posts, curbing, signs, roadways, driveways, sidewalks, and other items which interfere with the progress of the work. Shore or guy any utility pole as required by the utility company.
- B. Contractor shall make arrangements and notify property owners 72 hours prior to work which will affect their properties and indicate what will be done to restore the area after construction is completed.
- C. Contractor shall notify all utility companies and local, state and federal authorities which will be affected by his work 72 hours prior to beginning work.
- D. Wherever streets, lawns, roadways, driveways, or sidewalks within or outside the contract limit lines have been excavated in fulfilling the work required under this Contract, the Contractor shall furnish and install all materials to bring finished surfaces level with the existing adjacent surfaces and returned to its original condition.
- E. If, during the progress of the contract work, any water pipe, sewer, conduit, drain, or other utility (public or private) is damaged as a result of operations under this Contract, the Contractor, as determined by the Engineer, shall repair all such damage and restore work to its original condition, at no additional expense to Owner.

- F. Restoration work shall be completed to the satisfaction of the Engineer. Work not deemed satisfactory by the Engineer shall be redone by the Contractor at the Contractor's expense.

1.4 TRENCHES NOT IN PAVED AREAS

- A. Where the trench occurs adjacent to paved streets in shoulders, sidewalks, or in cross-country areas, the Contractor shall thoroughly mechanically compact the backfill and shall maintain the surface as the work progresses. If settlement takes place, the Contractor shall immediately deposit additional fill to restore the level of the ground. In areas which are not to be loam and seeded, trench backfill in unpaved surfaces shall have the top 12-inch layer of backfill consist of processed gravel.
- B. If in the opinion of the Engineer, the top 12-inch layer is unsuitable for use as base course, he may order the Contractor to remove this layer and to provide material that meets specifications.
- C. Loam and seed or sod work shall be performed as specified in Section 02480.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION 02498

SECTION 02770

SEWER MANHOLE REHABILITATION

PART 1 GENERAL

1.01 SUMMARY

- A. The work covered under this section includes the furnishing of all plant, labor, equipment, appurtenances, and materials, and performing all operations for the internal inspection and rehabilitation of existing manholes, in accordance with these Specifications and as shown on the Contract Drawings. It is the intent of this contract to provide for manhole renewal to stop infiltration, inflow, and exfiltration; repair voids; restore structural integrity; provide corrosion protection, and abrasion protection for existing manholes by chemical sealing/grouting, by the application of a uniform, continuous and densely compacted cementitious layer of design formulated high quality mortar, and by the installation of an internal chimney sealant system.
- B. The work shall include elimination of active infiltration by chemical grout sealing; removal of loose and/or unsound material, removal and retrieval of steps, cleaning, patching and preparation of surfaces, repair and chemical grout sealing of the invert, bench, walls, and application of a cementitious liner. The work may include flow handling and bypass as necessary. All manhole preparation and rehabilitation activities shall be performed in strict adherence with the manufacturer's written recommendations. All work shall be performed in accordance with applicable OSHA standards, particularly those requirements involving confined spaces.
- C. The Contractor shall verify manhole sizes, shapes, internal materials, pipe penetrations and all other configurations prior to performing any work. The Contractor shall be responsible for providing detailed reports of the rehabilitation work performed for each manhole and structure. The reports for rehabilitation work for manholes and structures shall include but is not limited to pre- and post-rehabilitation CCTV reports in accordance to NASSCO MACP standards; photographs of the complete rehabilitation process before, after and during the rehabilitation; reports on leakage observed prior to start of rehabilitation; results of leakage tests performed after completion of rehabilitation; and all other applicable assessments.

1.02 RELATED SECTIONS

- A. Section 02760 – Pipeline Cleaning and Internal Inspection
- B. Section 02761 – Flow Bypass
- C. Section 02767 – Cured-In-Place Pipelining

1.03 CODES AND STANDARDS

- A. Naugatuck Engineering Street and Sidewalk Standards

1.04 SUBMITTALS

General: Submit the following in accordance with the Conditions of Contract and Division 1 Specification Sections.

- A. Qualifications of the firm/personnel who will perform the work in accordance with Part 1.4 of this specification section.
- B. Product data for each type of product specified including physical properties; surface preparation, mix design, application, repair, curing, testing and field quality control procedures.
- C. The Contractor shall in his submittals, provide a Work Plan detailing the procedures and the steps to be followed for each step of the repair process to be used. Work Plan shall include:
 - 1. Manufacturer's written instructions for material handling and storage, surface preparation, application of materials, curing time and testing procedure.
 - 2. Methods and materials proposed to seal leaks.
 - 3. Equipment to be used.
 - 4. Anticipated sequence and duration of the work.
 - 5. Test procedures.
 - 6. Traffic and pedestrian management plan for each location.
 - 7. Flow handling and bypass (as needed).
- D. Manufacturer's warranty.
- E. Submit MSDS Data Sheets for proposed chemicals to be used.

1.05 QUALIFICATIONS

- A. The Authority reserves the right to request, inspect, examine, verify, and review information pertaining to a contractor's qualifications and proposed method(s) for compliance with the Contract Specifications.
- B. The qualifications of the Contractor shall be submitted to demonstrate that the Contractor meets or exceeds the minimum requirements specified herein. Any

Contractor whose qualifications do not meet the minimum qualifications shall be rejected and shall not be permitted to participate in the construction of work specified herein.

- C. It is the responsibility of the Contractor to confirm that any subcontractor or manufacturer proposed for performance of the work under this section of the Specifications can demonstrate the minimum requirements specified herein. Rejection of any subcontractor and/or manufacturer shall not be grounds for modifications to the Contract Documents. No change in contract time of completion or contract cost will be allowed of such rejection of a subcontractor and/or manufacturer to meet the minimum requirements specified herein.
- D. The Contractor or Subcontractor(s) shall each be certified by the manhole rehabilitation system manufacturer(s) that such firm is a licensed installer of their system, and for each rehabilitation method has completed at least five (5) similar projects, in the United States of America, in the past three (3) years on sewer projects. The Contractor shall submit certifications for each rehabilitation system utilized for the complete manhole rehabilitation work.

1.06 WARRANTY

- A. The manhole rehabilitation work shall be warranted against infiltration, corrosion, coating delamination, flaking, and spalling, as well as faulty workmanship and materials for five years from the date the project work is accepted by the Authority. The accepted post-rehabilitation MACP inspection reports shall serve as the baseline for each manhole's internal conditions, respectively and the basis from which future assessment and inspections by the Authority and the Authority's representative will be evaluated against.

PART 2 **PRODUCTS**

2.01 SEWER MANHOLE REPAIR MATERIALS

- A. Portland Cement: ASTM C150, Type II.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Sand: Fine aggregate, for mortar, passes No. 8 sieve.
- D. Mortar:
 - 1. For Brickwork: Mix portland cement, hydrated lime and sand in proportion by volume of 1:1/2:4-1/2. Use sufficient water to form a workable mixture to make mortar damp, just short of balling.
 - 2. For Filling Grout Holes: Mix portland cement and sand in proportion by volume 1:1-1/2, with sufficient water.

3. For Plugging Active Leaks: Fast setting, high strength mortar, resistant to freeze-thaw expansion, de-icers, and erosion due to abrasion. Octo-Crete made by IPA Systems, Inc., Philadelphia, PA; Speed-Crete made by Tamms Co., Inc., Itasca, IL; Fast Setting Cement made by W.R. Bonsal Co., Lilesville, NC; or an acceptable equivalent product.
- E. Brick ASTM C32, Grade SS, except mean of five tests for adsorption not to exceed 8 percent by weight.
1. ASTM C32, Grade SS, except mean of five tests for adsorption not to exceed 8 percent by weight. Grade SS brick to be used when exposed to direct sewer environment and not subject to freeze-thaw cycle (below frost line).
 2. ASTM C216, Grade SW, to be used for adjusting casting within the frost zone and for manhole frames.
- F. Chemical Sealing Materials: The following is a general listing of chemical grout sealing materials which the Contractor may use for sealing manholes and the basic requirements, properties, and characteristics of each. The Contractor shall use a chemical grout that is environmentally safe for the sealing of sewers.
1. Acrylamide Base Gel:
 - a. A minimum of 10 percent acrylamide base material by weight in the total sealant/grout mix. A higher concentration of acrylamide base material may be used to increase strength or offset dilution during injection.
 - b. The ability to tolerate some dilution and react in moving water during injection.
 - c. A viscosity of approximately 2 centipoise, which can be increased with additives.
 - d. A constant viscosity during the reaction period.
 - e. A controllable reaction time from 10 seconds to 1 hour.
 - f. A reaction (curing) which produces a homogeneous, chemically stable, non-biodegradable, firm, flexible gel.
 - g. The ability to increase mix viscosity, density, and gel strength by the use of additives.
 2. Acrylic Base Gel:

- a. A minimum of 10 percent acrylic base material by weight in the total sealant/grout mix. A higher concentration of acrylic base material may be used to increase strength or offset dilution during injection.
 - b. The ability to tolerate some dilution and react in moving water during injection.
 - c. A viscosity of approximately 2 centipoise, which can be increased with additives.
 - d. A constant viscosity during the reaction period.
 - e. A controllable reaction time from 5 seconds to 6 hours.
 - f. A reaction (curing) which produces a homogeneous, chemically stable, non-biodegradable, firm, flexible gel.
 - g. The ability to increase mix viscosity, density, and gel strength by the use of additives.
3. Polyacrylamide Base Gel:
- a. A minimum of 10 percent polyacrylamide base material by weight in the total sealant/grout mix. A higher concentration of polyacrylamide base material may be used to increase strength or offset dilution during injection.
 - b. The ability to tolerate some dilution and react in moving water during injection.
 - c. A viscosity of approximately 30-35 centipoise at 10% solids as applied. The ability to increase mix viscosity, density, and gel strength by the use of additives.
 - d. A controllable reaction time from 10 seconds to 5 minutes.
 - e. A reaction (curing) which produces a homogeneous, chemically stable, non-biodegradable, firm, flexible gel.
4. Urethane Base Gel:
- a. 1 part urethane prepolymer thoroughly mixed with between 5 and 10 parts of water by weight. The recommended mix ratio is 1 part urethane prepolymer to 8 parts of water (11% prepolymer).
 - b. A liquid prepolymer having a solids content of 77% to 83%, specific gravity of 1.04 (8.65 pounds per gallon), and a flash point of 20°F.

- c. A liquid prepolymer having a viscosity of 600 to 1200 centipoise at 70°F that can be pumped through 500 feet of ½-inch hose with a 1000 psi head at a flow rate of 1 ounce per second.
- d. The water used to react the prepolymer should have a pH of 5 to 9.
- e. A cure time of 80 seconds at 40°F, 55 seconds at 60°F, and 30 seconds at 80°F when 1-part prepolymer is reacted with 8 parts of water only. Higher water ratios give longer cure times.
- f. A cure time that can be reduced to 10 seconds for water temperatures of 40°F to 80°F when 1 part of prepolymer is reacted with 8 parts of water containing a sufficient amount of gel control agent additive.
- g. A relatively rapid viscosity increases of the prepolymer/water mix. Viscosity increases from about 10 to 60 centipoises in the first minute for 1 to 8 prepolymer/water ratio at 50°F.
- h. A reaction (curing) which produces a chemically stable and nonbiodegradable, tough, flexible gel.
- i. The ability to increase mix viscosity, density, gel strength and resistance to shrinkage by the use of additives to the water.

2.02 SEWER MANHOLE LINING MATERIALS

A. Engineered Cementitious Manhole Liner Materials

- 1. Product Requirements/Quality Standards:
 - a. Liner material (with corrosion protection admixture) capable of being spin-cast or spray applied.
 - b. Chemically resistant, capable of withstanding internal exposure to corrosive sewage gases without degradation.
 - c. Waterproof, capable of providing a durable, waterproof barrier and withstanding maximum hydrostatic pressures exerted on manhole walls.
 - d. Interior liner material to be non-toxic (solventless), biologically inert, and shall not contain any toxic compounds or release any toxic odors or carcinogenic agents into the surrounding environment.
 - e. Interior liner material shall be capable of permanently bonding to properly prepared surfaces such as brick, concrete or other materials encountered in sanitary sewer manholes, in dry, damp, or wet conditions.

2. Liner Material Minimum Physical Properties

Unit Weight	±135 pcf
Set Time at 70 °F ASTM C-403	60 minutes
Flexural Strength ASTM C-293/C-78	
24 hours	min. 400 psi
28 days	>1,200 psi
Compressive Strength ASTM C-109	
24 hours	min. 3,000 psi
28 days	>8,000 psi
Tensile Strength ASTM C-307/C-496	>700 psi
Shear Bond ASTM C-882	>2,000 psi
Impact Strength	18 cycles
Thin Section Toughness	Excellent
Abrasion Resistance	2% @ 1000 cycles
Sulfate Resistance ASTM C-267	No attack after 90 days
Freeze/thaw Resistance ASTM C-666	No visual damage after 200 cycles
Biogenic Sulfide Resistance	Excellent at pH 2 and higher
Shrinkage ASTM C-157/C-596/C-1090	None
Chloride Permeability ASTM C-1202	<550 Coulombs

3. Hydrogen Sulfide Protection

- a. As required by design, the admixture shall be a liquid admixture for cement mortars for the prevention of microbiological induced corrosion (MIC) common to concrete pipe, manholes and similar structures in municipal sewer environments. As an additive, it shall permeate the liner material during the mixing phase and molecularly bond to the

cement particles to create an environment incompatible to the growth of harmful bacteria.

- b. The admixture or mix shall become an integrated component of the hardened binder. It shall not wash off, delaminate, or lose its effectiveness from wear.
- c. The admixture shall be suitable for use in the rehabilitation of manholes and structures present in municipal sewer environments or wherever Thiobacillus bacteria may cause MIC.

2.03 MANHOLE FRAME-CHIMNEY SEAL

A. Manhole Chimney Seal

- 1. Product Requirement/Quality Standards
 - a. Chimney seal material shall be a plural component elastomeric urethane capable of being spray applied to form a bonded, continuous, flexible, impermeable surface.
 - b. Chemically resistant, capable of withstanding internal exposure to corrosive sewage gases without degradation.
 - c. Waterproof, capable of providing a durable, waterproof barrier and withstanding maximum hydrostatic pressures exerted on manhole walls.
 - d. Interior liner material to be non-toxic (solventless), biologically inert, and shall not contain any toxic compounds or release any toxic odors or carcinogenic agents into the surrounding environment.
 - e. Chimney seal material shall be capable of permanently bonding to properly prepared surfaces such as brick, concrete, a previously applied cementitious liner or other materials encountered in sanitary sewer manholes. An applicable primer material shall be per manufacturers written recommendations.

2. Chimney Seal Minimum Physical Properties

Tensile Strength	ASTM D638	>1,200 psi
Elongation	ASTM D638	300%
Hardness, Shore A	ASTM D2240	75
Adhesive Strength	ASTM D903	170i”

2.04 MANHOLE FRAME AND COVER

- A. Manhole frame and cover shall be EJ Co, or approved equal.
- B. Frame and cover shall be manufactured from Cast Iron and be 3rd party certified. Product shall be fully tested in road conditions for a period of at least 2 years. Frame shall be capable of withstanding heavy-duty design load, shall be circular and shall incorporate a seating ring capable of withstanding surface water inflow and absorbing shock from routine traffic. Product shall be ASTM A48, ASHTO H20-44 and ASHTO M306-10 certified.
- C. Frame will be available in a 24-inch clear opening. Frame depth shall be 8 inches, and the flange shall incorporate bedding slots and bolt holes.
- D. Cover shall be one-man operable using standard tools, and have two open pickholes of 1-1/4 inches. Cover shall be 26-inches in diameter, and have "SEWER" cast in top in 3-inch flat face gothic.

2.05 MANHOLE RISERS

- A. Precast reinforced concrete grade rings.

2.06 BITUMINOUS WATERPROOFING MATERIAL

- A. No. 46-449 Heavy Duty Black made by Tnemec Company, Inc., North Kansas City, MO.
- B. No. 35-J-10 Hi-Build Bituminous Coating made by Valspar Corporation, Short Hills, NJ.
- C. Bitumastic Super Service Black made by Kop-Coat Company, Inc., Pittsburgh, PA.
- D. Or acceptable equivalent product.

PART 3 EXECUTION

3.01 GENERAL

- A. The Contractor shall submit a work plan to address the items specified below, unless approved otherwise by the Authority.
- B. Safety
 - 1. The Contractor shall carry out his operations in strict accordance with

all applicable OSHA, State, and local standards. Particular attention is drawn to those safety requirements involving work entry into a confined space. It shall be the Contractor's responsibility to familiarize himself/herself with OSHA standards and regulations pertaining to all aspects of the work.

C. Pre and Post Manhole Inspections

1. The Contractor shall perform initial manhole inspections to document the existing conditions of the manholes identified for rehabilitation in the Contract Drawings prior to any work. The Contractor shall perform post-rehabilitation manhole inspections following the completion of the rehabilitation and repair work. All defects and repairs should be documented in the inspection reports. The inspection reports shall include inspection videos and photos documenting the assessment and shall conform to the NASSCO MACP Standards.

D. Flow Control

1. The Contractor shall provide for continuous sewage flow around the work area. The pump bypass lines shall be of adequate capacity and size to handle the flow.

E. Cleaning

1. Pressure wash manhole walls and bench using a high-pressure water spray with minimum pressure of 3,500 psi.
2. Provide suitable screening and other means of trapping and blocking as required to prevent cleaned material at the manhole bottom from passing into the downstream sewer.
3. Promptly remove any screened, trapped, or blocked material from the manhole bottom by suitable means, place in containers suitable for transport over roads, remove from site and dispose of at a location designated by the Contractor and approved by the Authority. The removal and disposal of debris material cleaned from manholes shall be in accordance with all local, state, and federal regulations and laws, and at no additional cost to the Authority.

3.02 MANHOLE SEALING/GROUTING

- A. The manhole interior shall be cleaned and all visible leaks and areas showing evidence of leakage shall be sealed as indicated and as specified.
- B. A hole shall be drilled from within the manhole through the thickness of the manhole wall at each leakage point.

- C. Where there are multitude leaks around the circumference of the manhole, the Contractor, at his option, may drill fewer holes providing such holes are sufficient in number to seal all leakage into the manhole.
- D. A pipe packer shall be fitted into the drilled hole in a manner that will permit sealing the manhole leaks watertight.
- E. To each pipe packer a hose shall be attached to allow for the injection of the sealing material.
- F. The Contractor shall ensure that the pressure exerted by the equipment does not damage the manhole structure. Any damage resulting from the Contractor's operation shall be repaired at the Contractor's expense.
- G. The manhole shall be sealed until no visible leaks are observed.
- H. When the injection of the sealing material has been completed for the manhole and no visible leakage is observed, the packer pipes shall be removed, the sealing material shall be cleaned from the holes in the manhole wall and the holes filled with portland cement mortar composed by volume of 1 part cement to 1-1/2 parts sand and sufficient water to make a workable stiff mix.
- I. After the manhole sealing operations are complete and the portland cement mortar has attained its set, the manhole shall be visually inspected by the Contractor in the presence of the Authority.
- J. Any sealing work which is determined to be defective, in the opinion of the Authority, shall be resealed at no additional expense to the Authority.

3.03 MANHOLE INVERT AND BENCH REPAIR

- A. The manhole shall be thoroughly cleaned, and all debris shall be disposed of as specified.
- B. Invert and Bench Repair
 - 1. All deteriorated or loose brick and mortar work shall be removed by suitable means and replaced with new brick and mortar as specified herein.
 - 2. Bricks shall be moistened before being placed. Brick shall be laid in a full bed and joint of mortar without subsequent grouting, flushing, or filling; and they shall be thoroughly bonded.
 - 3. Fill material shall be Class A (3,000 psi minimum compressive strength) concrete.
 - 4. Inverts shall be rebuilt to the degree possible in order to provide a

smooth flow transition through the manhole.

5. The bench shall be rebuilt with a gradual slope from the wall to the invert.
- C. The Contractor shall allow for proper cure time for brick and mortar before reestablishing the flow through the manhole.
- D. The Contractor shall allow for proper cure time for brick and mortar before applying the manhole rehabilitation lining material as recommended by the lining material manufacturer.

3.04 MANHOLE INTERIOR LINING

- A. In addition to cleaning, a 10 percent muriatic acid or detergent solution shall be applied to the manhole surfaces where required to further remove any surface contaminants. Following the application of the acid or detergent solutions, all manhole surfaces shall be thoroughly rinsed and neutralized prior to application of the interior liner. Surface profiling to achieve adherence shall be provided in accordance with the lining manufacturer's recommendations.
- B. Once all surfaces have been properly prepared to the satisfaction of the Authority, all visible leaks and areas showing evidence of leakage shall be sealed utilizing chemical grout sealing as specified herein, hydraulic cements, or other means acceptable to the Authority and in conformance with the lining manufacturer's recommendations.
- C. After cleaning procedures, sealing areas of leakage, and bench and invert repair, the manholes shall receive interior linings as follows:
 1. A minimum of two layers of cementitious material shall be spray applied from the bottom of the wall to the bottom of the frame. After each application, the surface shall be troweled to a smooth finish. A brush finish shall then be applied to the troweled finish surface after the second layer is applied. The total liner thickness shall be as recommended by the lining manufacturer for the type of surface lined and loads experienced, but in no case shall the liner thickness be less than ½ inch per layer.
 2. Once the walls are lined, the bench and invert shall be cementitious lined following the procedure described herein and in such a manner that a gradual slope is produced from the walls to the edge of the invert with the thickness at the invert to be no less than ½ inch. The joint between the wall and the bench shall be troweled along the circumference of the manhole to provide a smooth transition.
 3. All interior linings to be spray applied shall utilize equipment and other appurtenant devices approved by the lining manufacturer. The application

shall be performed by a certified applicator. The proper cure time shall be allowed for between layers. All liners shall be applied in strict accordance with the manufacturer's written instructions and as specified herein.

4. After the manhole lining operations are complete, the manhole shall be visually inspected by the Contractor in the presence of the Authority. The manhole shall be relined to cover any pinholes or other defects observed, at no additional expense to the Authority. All liners shall be smooth and uniform in appearance, and free of defects.
5. Upon completion of the manhole lining and testing, the manhole shall be cleaned of all material not permitted to pass downstream in the sewer and all equipment, tools and plugs shall be removed.

3.05 FRAME-CHIMNEY SEALANT SYSTEM

- A. Surfaces shall be prepared in accordance with the manufacturers written recommendations. All prior manhole interior lining work shall be complete prior to the installation of the manhole chimney seal. Realign manhole frame and cover if offset is greater than three (3) inches between the frame and top of the manhole structure.
- B. The chimney seal material shall be applied in accordance with the manufacturers written recommendations to a minimum thickness of 200 mils. The chimney seal material shall extend far enough onto the frame to ensure bonding and cover enough of the chimney to ensure sealing (minimum 4 vertical feet with a minimum 4-inch overlap onto frame) or as directed by the Authority.
- C. Following installation, Contractor shall visually inspect the seal in the presence of the Authority.

3.06 FIELD TESTING AND INSPECTION

- A. Visual Inspection
 1. The Contractor shall visually inspect each of the sewer manholes rehabilitated during this project in the presence of the Authority. The Contractor shall repair any defects found until there are no defects or visible leaks.
- B. Additional Testing
 1. General
 - a. The Contractor shall perform additional vacuum testing to 5% of the sewer manhole rehabilitated, as specified herein.

- b. The manholes in the test sample will be selected and approved by the Authority and will consist of manholes from throughout the project area that are representative of the manhole rehabilitation work completed as part of this contract.
- c. Any manholes failing these additional tests shall be sealed and retested until the test is passed and/or the results are satisfactory to the Authority. Contractor will not be paid for rehabilitated manholes that do not pass multiple retests and the results are not satisfactory to the Authority.

2. Vacuum Testing

- a. Leakage tests manholes may be made using vacuum testing equipment in accordance with ASTM C1244. For this test, manhole shall be tested under 10 inch of Hg vacuum. The test shall pass if the vacuum remains at 10-inch Hg or drops no lower than 9-inch Hg after 60 seconds for manholes 0 to 10 feet deep, 75 seconds for manholes 10 to 15 feet deep or 90 seconds for manholes 15 to 25 feet deep.

- C. All inspecting, testing, and reworking within the warranty period shall be provided at no additional cost to the Authority.

3.07 SETTING MANHOLE FRAME AND COVERS

- A. Set frames with top conforming to finished ground or pavement surface as indicated.
- B. Set circular frames concentric with top of masonry.
- C. Set frames in full bed of mortar to fill and make watertight the space between masonry top and bottom flange of frame.
- D. Place thick ring of mortar extending to outer edge of masonry, around bottom flange. Finish mortar smoothly and give a slight slope to shed water away from frame.
- A. E. Replace deteriorated bricks beneath the frame, adjust and/or raise frames to grade using a maximum of four (4) courses of brick, anything further will constitute a rebuild riser.
- B. Place a 12" deep by 12" wide concrete collar around frame when placing permanent pavement leaving 1.5 inches for bituminous concrete surface course.

Place a 12" deep by 12" wide concrete collar around frame when placing permanent pavement leaving 1.5 inches for bituminous concrete surface course.

GF. Place covers in frames on completion of work.

END OF SECTION 02770

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SECTION 02622

POLYVINYL CHLORIDE GRAVITY PIPE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract apply to this Section.

1.2 SUMMARY

- A. This section includes the following:
 - 1. Providing and testing of pipe, pipe fittings and specials, jointing materials, and accessories, of various sizes, classes, joints and types, and appurtenant work, at the locations and to the lines and grades as indicated and/or as directed, complete in place, in accordance with the drawings and specifications.
 - 2. The pipe specified under this section shall include all gravity flow sanitary sewers for spot repairs.
- B. Related sections include the following:
 - 1. Section 02210 – Earth Excavation, Backfill, Fill and Grading

1.3 SUBMITTALS

- A. Shop Drawings: Submit the following in accordance with the General Requirements of the Contract Documents:
 - 1. Submit shop drawings or descriptive literature, or both, showing pipe dimensions, joints, joint gaskets, and other details for each size of pipe to be furnished for the project. All pipe furnished shall be manufactured only in accordance with the specifications and the drawings.

1.4 QUALITY ASSURANCE

- A. Provide in accordance with the General Provisions of the Contract Documents and as specified.
- B. Contractor shall provide any required permits.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with the General Provisions of the Contract Documents.

PART 2 - PRODUCTS

2.1 PIPE FITTINGS AND SPECIALS

- A. The polyvinyl chloride pipe and fittings, including those required for stubs, shall conform to ASTM Standard Specifications for Type PSM PVC Sewer Pipe and Fittings, Designation ASTM D3034, latest revision, for sizes 4"-15" and ASTM F679, latest revision, for sizes 18"-27". The pipe shall have a maximum pipe diameter to wall thickness ratio (SDR) of 35. The pipe shall be tested by the flat plate deflection method at a minimum of 45 psi at 5 percent deflection in accordance with ASTM D 2412. Standard laying lengths shall be either 13 feet or 20 feet.

2.2 SHIELDED FLEXIBLE COUPLINGS

A. General

1. Shielded flexible couplings shall be used to connect the new section of sewer pipe to the existing sewer pipes. Typical applications are where new pipe connects to existing PVC pipe or a pipe with dissimilar material .
2. Couplings and shields shall be sized to fit the outer diameter of pipe, and be rated for the pipe material and conditions of service by the manufacturer.
3. Eccentric couplings shall be used where connecting pipes of different nominal diameter.
4. The CONTRACTOR will not be allowed to substitute any other type of coupling unless approved by the Engineer.

B. Construction

1. Flexible couplings shall be in accordance with ASTM C1173 – Standard Specification for Flexible Transition Couplings for Underground Piping Systems.
2. Rubber sleeves shall be rated for heavy earth loads and be immune to attack by chemicals and impurities normally found in water wastewater.

3. Shields shall consist of a rigid stainless steel shear ring.
4. Bolts, nuts, straps, and all miscellaneous hardware shall be Type 316 stainless steel.

C. Manufacturer

1. Couplings shall conform to ASTM C1460 and C564 and shall be Fernco 1000RC series, Flex Seal MR02, MR06 or 51 or equal. Non-shielded couplings are not acceptable.

2.3 INSPECTION, TESTS AND ACCEPTANCE

- A. All pipe delivered to the job site shall be accompanied by test reports certifying that the pipe and fittings conform to the above-mentioned ASTM Specifications. In addition, the pipe shall be subject to thorough inspection and tests, as deemed necessary by the Engineer.
- B. All tests shall be made in accordance with the methods prescribed by the above mentioned ASTM Specifications, and the acceptance or rejection shall be based on the test results.
- C. The Contractor shall furnish all labor to assist the Engineer in inspecting the pipe. Pipe will be inspected upon delivery, and such as does not conform to the requirements of this contract shall be rejected and shall immediately be removed from the project site by the Contractor.

PART 3 - EXECUTION

3.1 HANDLING PIPE

- A. All pipe shall be stored at the site until installation in a manner which will keep the pipe at ambient outdoor temperatures. Temporary shading shall be provided as required to meet this requirement. Simply covering the pipe which allows temperature build-up when exposed to direct sunlight will not be permitted.
- B. Care shall be taken to avoid damaging the pipe and fittings.

3.2 INSTALLATION

- A. Each pipe unit shall be inspected before being installed. No single piece of pipe shall be laid unless it is generally straight. The centerline of the pipe shall not deviate from a straight line drawn between the centers of the openings at the ends of the pipe by more than 1/16-inch per foot of length. If a piece of pipe fails to meet this requirement for straightness, it shall be rejected and removed from the site. Any pipe unit or fitting discovered to be defective either before or

after installation shall be removed and replaced with a sound unit.

- B. No pipe or fitting shall be permanently supported on saddles, blocking, or stones. Crushed stone and sand shall be as specified in Section 02210.
- C. Suitable bell holes shall be provided, so that after placement, only the barrel of the pipe receives bearing pressure from the supporting material. Special care shall be taken to hold the trench width at the crown of the pipe to the maximum width indicated in the Trench Detail on the Contract Drawings.
- D. All pipe and fittings shall be cleared of all debris, dirt, etc., before being installed and shall be kept clean until accepted in the completed work.
- E. Pipe and fittings shall be installed to the lines and grades indicated on the Drawings. Care shall be taken to ensure true alignments and gradients.
- F. Before any joint is made, the previously installed unit shall be checked to assure that a close joint with the adjoining unit has been maintained and that the inverts are matched and conform to the required grade. The pipe shall not be driven down to the required grade by striking it with a shovel handle, timber or other unyielding object.
- G. All joint surfaces shall be cleaned. Immediately before jointing the pipe, the bell or groove shall be lubricated in accordance with the manufacturer's recommendation. Each pipe unit shall then be carefully pushed into place without damage to pipe or gasket. Suitable devices shall be used to force the pipe units together so that they will fit with minimum open recess inside and outside and have tightly sealed joints. Care shall be taken not to use such force as to wedge apart and split the bell or groove ends.
- H. Joints shall not be "pulled" or "cramped" unless permitted by the Engineer.
- I. Where any two pipe units do not fit each other closely enough to enable them to be properly jointed, they shall be removed and replaced with suitable units and new gaskets.
- J. Where couplings are used, plain ends of pipe shall be made smooth and round for a distance of 12 inches from the ends of the pipe, with an outside diameter not more than 1/64 inch smaller than the manufactured outside diameter of pipe. Install couplings per manufacturer's written instructions.
- K. SPARE PARTS – Contractor shall maintain an on-site inventory of couplings suitable for use with various nominal diameters and materials of proposed and existing pipe referenced in the Contract Documents. Contractor shall be responsible to verify the outer diameter of pipe in advance through measurements taken at access manholes and test pits. The lead times for

fabrication, stocking, and shipping of couplings shall not be cause for delay or the use of other types of couplings.

- L. Open ends of pipe and branches shall be closed with polyvinyl chloride stoppers secured in place in an acceptable manner.
- M. After each pipe has been properly bedded, enough bedding material shall be placed between the pipe and the sides of the trench, and thoroughly compacted, to hold the pipe in correct alignment. Bell holes, provided for jointing, shall be filled with bedding material and compacted, and then bedding material shall be placed and compacted to complete the pipe bedding.
- N. The Contractor shall take all precautions to prevent flotation of the pipe in the trench.
- O. At all times pipe installation is not in progress, the open ends of the pipe shall be closed with temporary watertight plugs, or by other acceptable means.
- P. If water is in the trench when work is to be resumed, the plug shall not be removed until suitable provisions have been made to prevent water, earth, or other substances from entering the pipe.
- Q. Pipelines shall not be used as conductors for trench drainage during construction.
- R. During backfilling operations, a brightly colored polyethylene tape manufactured specifically for warning and identification of buried utility lines shall be buried 2 feet below the ground surface along the entire length of the pipe from the pumping station to the point of discharge. Tape shall be provided in rolls, 6-inches minimum width, color coded for intended service with warning and identification imprinted in bold black letters continuously and repeatedly over entire tape length. Warning and identification shall be "CAUTION BURIED SEWAGE PIPE BELOW" or similar wording. Code and letter coloring shall be permanent, unaffected by moisture and other substances contained the trench backfill material.
- S. For all Point Repairs, the existing bedding underneath new couplings and new PVC pipe shall be dug out and replaced with new bedding in order to provide adequate support to prevent settling. The grade of the new PVC pipe shall match that of the existing grade of the existing VCP pipe.
- T. When connecting new PVC pipe to an existing manhole, the Contractor shall provide non-shrink grout to seal this penetration.

3.3 ALLOWABLE PIPE DEFLECTION

- A. Pipe provided under this Specification shall be so installed as to not exceed a maximum deflection of 5.0 percent. Such deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
- B. Upon completion of a section of pipe, including placement and compaction of backfill, the Contractor shall measure the amount of deflection by pulling a specially designed gage assembly through the completed section. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer, and be reviewed by the Engineer. The section of pipe must be placed and backfilled for a minimum of 90 days before the deflection can be measured.
- C. Should the installed pipe fail to meet this requirement, the Contractor shall do all work to correct the problem without additional compensation.

3.4 CLEANING

- A. Care shall be taken to prevent earth, water and other materials from entering the pipeline. As soon as possible after the pipe and manholes are completed, the Contractor shall clean out the pipeline and manholes being careful to prevent soil, water and debris from entering any existing pipe.

3.5 TESTING OF PIPE

- A. If the visual inspection of the completed pipe or any part thereof shows any pipe, manhole or joint which allows infiltration of water in a noticeable stream or jet, the defective work or material shall be replaced or repaired as directed.
 - 1. If the section of pipe exhibits any visible leakage, the Contractor shall locate, uncover and repair or replace the defective pipe fitting or joint and retest all at the Contractor's own expense. Passing the test does not absolve the Contractor from their responsibility if leaks develop later within the period of warranty.
- B. Pipe Deflection Test
 - 1. Pipe provided shall be installed as to not exceed a maximum deflection of 7.5%. Such deflection shall be computed by multiplying the amount of deflection (nominal diameter less minimum diameter when measured) by 100 and dividing by the nominal diameter of the pipe.
 - 2. Upon completion of a section of pipe, including placement and compaction of backfill, the Contractor shall measure the amount of

deflection by pulling a specially designed gage assembly through the completed section, as directed by the Engineer. The gage assembly shall be in accordance with the recommendations of the pipe manufacturer and be reviewed by the Engineer.

- a. The section of pipe must be placed and backfilled for a minimum of 90 days before the deflection can be measured.
3. Should the installed pipe fail to meet this requirement, the Contractor perform all work to correct the deficiency including replacement of the damaged section without additional compensation.

END OF SECTION 02622

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SECTION 02760

PIPELINE CLEANING AND INTERNAL INSPECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Furnishing all plant, labor, equipment and materials, as well as performing all operations associated with pipeline cleaning within the pipelines indicated on the Drawings in accordance with these Specifications.
2. Furnishing all plant, labor, equipment and materials, as well as performing all operations associated with pre and post construction closed-circuit television inspection of the pipelines indicated on the Drawings in accordance with these Specifications.
3. Performing the work in a sequence that is the least disruptive to vehicular and pedestrian traffic and in a manner that shall protect the public from damage to persons and property.

- B. Related Sections include the following:

1. Section 02761 – Bypass Flow Handling.
2. Section 02767 – Cured-in-Place Pipelining.

1.3 SUBMITTALS

- A. General: Submit each item in this article according to the general conditions of the Contract Documents:

1. Shop drawings and/or manufacturer's descriptive literature indicating materials, equipment and methods to complete pipeline cleaning operations.
2. Shop drawings and/or manufacturer's descriptive literature indicating materials, equipment and methods to complete internal inspection operations to complete internal inspection operations.

3. A representative sample videotape showing the quality of work obtained by the assembly prior to internal inspection and cleaning.
 4. Two (2) hard copies of inspection reports, two (2) flash drives of inspection videos, and electronic copies of inspection reports for both pre and post construction internal inspections.
 5. Confined Space Entry certifications for all personnel entering pipeline or access structures.
- B. Contractor shall submit complete documentation of qualifications as specified herein.

1.4 QUALITY ASSURANCE

- A. The Contractor cleaning and internally inspecting the pipeline shall have completed at least three (3) projects of similar size and complexity as this project in the United States within the past three (3) years. Contractor may employ the services of a subcontractor that specializes in this work to fulfill this requirement.
- B. Rejection of any subcontractor and/or manufacturer by the Engineer due to insufficient qualifications shall not be grounds for modifications to the Contract Documents such as change in scope, time of completion or contract amount.
- C. All Contractor's personnel entering pipeline or access structures shall be Confined Space Entry trained per OSHA, Title 29 CFR 1910.46 and shall have a copy of their certification available on site at all times.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with the general provisions of the Contract Documents.

PART 2 - PRODUCTS

2.1 CLEANING

- A. Contractor shall use mechanical, hydraulically-propelled, and/or high-velocity cleaning equipment, which does not exert internal pressures great enough to damage the pipelines and associated structures. Selection of the cleaning equipment shall be based on the condition of the pipeline at the time work is scheduled to commence.
- B. Equipment shall include, at a minimum, the following:

1. Motorized equipment complete with belt booster clutch, overload clutch or other means or devices that shall prevent damage to the pipeline and associated structures. Direct drive shall not be permitted.
2. Standard mechanical equipment including a combination of rodding machines, boring machines, bucket machines, hydraulic balls, B-liners, cones, ferrets or similar equipment. Direct drive shall not be permitted.
3. High pressure, hydraulically-propelled equipment and chemical compounds as approved by the Engineer.
4. Mechanical cutting devices suitable for the removal of roots, gaskets, protruding lateral connections, etc.
5. Footage metering devices for location of all equipment, devices and points of reference on measuring target that is known at all times at the ground level.

2.2 CLOSED-CIRCUIT TELEVISION INSPECTION

A. Camera and vehicle assembly:

1. Industry standard for internally inspecting pipelines within the range of diameters applicable to this project.
2. Remote-controlled, robotic assembly capable of viewing 360° of pipeline interiors. At areas of interest, camera shall be capable of rotating its lens to obtain a more direct viewing angle.
3. Capable of operation in 100 percent humidity conditions.
4. Capable of being moved through the pipeline in either direction at a slow rate by means of manual cable winches or motorized mechanical equipment of indirect drive type.
5. Capable of slowing down and stopping at areas of interest.
6. Provide high intensity light feature for recording purposes.
7. Capable of measuring the camera's position within the pipeline accurate 0.10 feet.

B. During the internal inspection of pipelines, the Owner and the Engineer shall have the ability to view the pipe interior as it is being inspected on a TV monitor set up in a remote location.

C. Electronic Video and Voice Recording:

1. Video recordings must, by electronic means, display continuously and simultaneously generated transparent digital information to include the date, time, pipeline section number, corresponding station numbers and direction of camera relative to flow.

Example: Time: 4:14:08 PM
 Date: 5/7/02

ELM ST.
MH #2 to MH #3 (Downstream)
PIPEID

2. Inspections shall be documented digitally and transferable by digital methods. The CCTV camera and illumination system shall be capable of providing a clean, accurate color and in-focus record of the sewers internal condition.

D. Advanced technologies:

1. Contractor may utilize an alternative method of internal inspection, such as digital systems, provided the method meets the minimum requirements indicated herein and provided it is acceptable to the Owner and the Engineer.

PART 3 – EXECUTION

3.1 GENERAL

- A. Contractor shall perform all work in accordance with municipal, state and federal requirements including OSHA.
- B. Contractor shall obtain relevant permits required to perform work prior to the commencement of construction at no additional cost to the Owner.
- C. Contractor shall locate, uncover and open all manholes and/or access structures required to complete the work in accordance with this Section.
- D. Contractor shall maintain existing flows around the work during cleaning and inspection operations in accordance with Section 02761.

3.2 PIPELINE CLEANING

- A. Contractor shall clean the pipeline to facilitate inspection and construction.

- B. Contractor shall protect the pipeline from damage that could be inflicted by use of cleaning equipment. Any damage inflicted, regardless of technique, shall be repaired by the Contractor to the satisfaction of the Owner, at no additional cost to the Owner.
- C. All sludge, dirt, sand, rocks, grease, and other solid or semi-solid materials that may cause an obstruction or impede the inspection and/or construction shall be removed and disposed off site during cleaning operations in watertight containers in conformance with all applicable federal, state and municipal laws and regulations, at no additional cost to the Owner. This shall also include all materials that will not cause an obstruction or impede the inspection and/or construction.
- D. If during cleaning operations an obstruction is encountered, the Contractor shall prosecute cleaning operations from both the upstream and downstream directions. Should the obstruction prevent the pipeline from being cleaned, the Engineer shall be notified immediately. If, in the opinion of the Engineer, a point repair is required to facilitate cleaning, Contractor shall perform the repair and clean through said repair upon its completion. No additional compensation shall be paid to the Contractor for any portion of the pipe which requires re-cleaning after successful completion of the repair.
- E. If during cleaning a protruding lateral is encountered that would impact lining, utilize a mechanical cutting device to remove to the protrusion. No additional compensation shall be paid to the Contractor for cutting and grinding.
- F. Contractor shall limit the use of water from hydrants to operations pertaining only to pipeline cleaning or other operations allowed in these Specifications. If water from fire hydrants is deemed necessary by the Contractor to avoid delay in normal work procedures, the water shall be conserved.
- G. No fire hydrants shall be obstructed at any time, nor shall a hydrant be used for the work described in these Contract Documents, unless a reduced pressure backflow preventor is furnished and installed by the Contractor and prior approvals have been obtained from the Owner and Municipal Fire Department. The Contractor shall be responsible for all related costs for the set-up, including the cost of water usage unless prior approvals have been obtained from the Owner and Municipal Fire Department and say otherwise.
- H. Contractor shall re-clean the pipeline, if in the opinion of the Engineer, materials have washed into the pipeline after acceptance of the cleaning and prior to construction at no additional cost to the Owner.

3.3 CLOSED CIRCUIT TELEVISION INSPECTION

- A. Sewer inspection camera operators shall have successfully completed the NASSCO Pipeline Assessment Certification and provide copies of completion certificates to the Engineer.
- B. Contractor shall inspect and record sewer pipe and assess the condition of the pipe according to NASSCO Pipeline Assessment defect coding standards. Contractor shall stop and focus the camera at locations where one or more of the following points of interest are observed, but not limited to:
 - 1. Inflow/Infiltration sources.
 - 2. Construction defects, discolorations, wrinkles, etc.
 - 3. Structural defects including broken pipe, collapsed pipe, cracks or abnormalities.
 - 4. Abnormal joint conditions such as root intrusion, protruding lateral connections, in-line pipe size changes and/or material changes.
 - 5. Mineral deposits, grease, obstructions, etc.
 - 6. Lateral connections; plugged or open.
 - 7. Offset joints or misalignments:
 - 8. Manholes, access structures, etc.
 - 9. Any other locations where the conditions may affect construction operations.
 - 10. Any other location as required by the Engineer.
- C. If, in the opinion of the Engineer, certain conditions may impede construction, Contractor shall perform a point repair.
- D. The Contractor shall provide and maintain access to the system, including inflow control and dewatering within pipelines and associated structures as well as all other work required to perform the internal inspections to the satisfaction of the Engineer.

3.4 INSPECTION REPORTS

- A. At the conclusion of each internal inspection, the Contractor shall provide a summary report highlighting results of the investigations and summarizing conditions and points of interest as specified herein. All documentation shall be cross-referenced by stationing to enable the reviewer to identify a particular location.

- B. The post construction inspection report shall detail the condition of constructed items and describe recommendations for repairs of any defects.
 - 1. All areas where the construction is defective due to workmanship, chemical deterioration, or other, shall be identified by the Contractor.
 - 2. If repairs are required, the Contractor shall produce a second post construction inspection report.

3.5 ACCEPTANCE

- A. Acceptance of the pipeline cleaning shall be made upon the successful completion of the television inspection. If, in the opinion of the Engineer, cleaning has not been completed in accordance with these Specifications, the Contractor shall be required to re-clean and re-inspect the pipe until the cleaning is shown to be satisfactory, at no additional cost to the Owner. The Engineer may require the Contractor to pull a double squeegee (with each squeegee the same diameter as the pipe) through each manhole section as evidence of adequate cleaning.
- B. Internal inspection operations, both pre and post construction, shall be considered for acceptance upon receipt by the Engineer of the following:
 - 1. Two (2) hard copies of the internal inspection reports.
 - 2. Two (2) electronic copies of the internal inspection reports (PDF) showing pipelines and associated structures as well as video inspections.

END OF SECTION 02760

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SECTION 02761

BYPASS FLOW HANDLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract Documents apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Furnishing all plant, labor, equipment and materials, as well as performing all operations associated with handling bypass flows from the existing system around the work indicated on the Drawings in accordance with these Specifications.
 - 2. Maintaining flow from main pipelines without interruption of service and maintaining flow in lateral connections with minimal interruption of service.
 - 3. Performing the work in a sequence that is the least disruptive to vehicular and pedestrian traffic and in a manner that shall protect the public from damage to persons and property.
- B. Related Sections include the following:
 - 1. Section 02760 - Pipeline Cleaning and Internal Inspection.
 - 2. Section 02767 - Cured-in-Place Pipelining.
 - 3. Section 02601 – Sewer Manhole Rehabilitation.
 - 4. Section 02622- Polyvinyl Chloride Gravity Pipe
- C. Contractor shall design the bypass flow handling system.

1.3 SUBMITTALS

- A. Submit the following in accordance with the general provisions of the Contract Documents:
 - 1. Shop drawings and/or manufacturer's descriptive literature indicating materials, equipment and methods to complete bypass flow handling operations.

2. Work plan including the following items:
 - a. Location, configuration and cross-country routing of bypass flow handling pipes.
 - b. Staging area(s) for pumps and other equipment.
 - c. Upstream flow collection location and/or bulkheads.
 - d. Downstream discharge location.
 - e. Method of protecting structures that accept discharge flows.
 - f. Locations of individual bypass flow handling systems.
 - g. Sample notification of property owner service shutdown.
 - h. Traffic management plan.
 - i. Roadway crossing details including hose ramps or trench details.
 - j. Noise pollution abatement plan.
3. List of 24-hour emergency telephone numbers at which the Contractor may be reached.

B. Contractor shall submit a Certificate of Design for the bypass flow handling system and shall be responsible for the design of the following system components:

1. Pumps.
2. Generators and power sources.
3. Suction and discharge piping.
4. Temporary pipe supports and anchoring.
5. Pipe plugging and bulkheads.
6. Noise control equipment.
7. Calculation of average and maximum daily flows.
8. Calculations of static lift, friction losses, flow velocity and flow rate.
9. Systems testing and start-up.

- 10. Maintenance of system for off-construction hours.
- 11. Contingency plan and equipment for system failures.
- C. Contractor shall submit complete documentation of qualifications as specified herein.

1.4 QUALITY ASSURANCE

- A. The Contractor designing and installing the bypass flow handling system shall have completed at least five (5) projects of similar size and complexity as this project in the United States within the past three (3) years. Contractor may employ the services of a subcontractor that specializes in this work to fulfill this requirement.
- B. Rejection of any subcontractor and/or manufacturer by the Engineer due to insufficient qualifications shall not be grounds for modifications to the Contract Documents such as change in scope, time of completion or contract amount.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Provide in accordance with general provisions of the Contract Documents.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. The bypass flow handling equipment shall be of sufficient size and material to convey existing flows from one access structure to at least the next access structure immediately downstream of the work without overflow, spillage or discharge to the surrounding environment.
- B. Contractor shall be fully equipped to operate and respond to any repair or replacement of the system (24 hours per day and 7 days per week) while the bypass flow handling system is in use.
- C. Contractor shall incorporate noise reduction equipment to minimize impact on the surrounding environment. Such measures shall include insulated enclosures, hospital grade silencers or mufflers, equipment modifications and/or special equipment to limit noise to eighty (80) dBA at seven (7) feet or sixty (60) dBA at the nearest residence or business.
- D. Contractor shall utilize hose ramps or lay-flat hose whenever crossing a roadway, driveway, sidewalk, or crosswalk.

2.2 DESIGN CRITERIA

- A. The pumps shall have venturi air evacuation priming system and oil bath mechanical seal that allows the pump to prime from dry, run dry indefinitely, and re-prime automatically.
- B. In the case a pump (diesel and electric) will require maintenance, it shall be the responsibility of the Contractor to monitor the hours of operation of each pumpset and request a service call.
- C. The monitoring and controls system shall have an onsite screen which will be able to provide the operator feedback on pump operation and speed, and instantaneous and totalized discharge flow.

PART 3 – EXECUTION

3.1 PREPARATIONS

- A. Contractor shall perform all work in accordance with municipal, state and federal requirements.
- B. Contractor shall obtain relevant permits required to perform work prior to the commencement of construction at no additional cost to the Owner.
- C. Prior to the commencement of construction, Contractor shall perform all possible preparatory work. The Contractor shall, at all times, conduct operations to interfere as little as possible with existing flows.
- D. Contractor shall verify flow conditions in the existing system prior to the commencement of construction. The Contractor shall have no claim for additional compensation by reason of delay or inconvenience in adapting its operations to the need for maintaining existing flows.
- E. Twice, prior to start-up of bypass flow handling system, Contractor shall notify, in writing, each property owner whose service shall be temporarily shut down two business days prior to the shut down. Contractor shall prepare notifications in accordance with Owner's requirements.

3.2 GENERAL

- A. Contractor shall not bypass flows overnight or on weekends unless by written permission from the Engineer or Owner.
- B. Contractor shall design the layout and routing of the bypass flow handling system to minimize disturbance to public and private land and to maintain access for pedestrians and traffic.

- C. The Contractor shall maintain traffic throughout the duration of bypass flow handling in accordance with the requirements of the “Manual on Uniform Traffic Control Devices”, latest edition.
- D. If excavation is required across roadways, all work shall be performed in accordance with municipal and/or state requirements.
- E. Contractor shall furnish, install, maintain and operate all temporary facilities such as dams, pumping equipment, conduits and all other labor and equipment necessary to intercept the flow before it reaches points where it would interfere with the work.
- F. Contractor may utilize pipelines in an existing parallel system as an alternative to installing a full bypass flow handling system pending approval by the Engineer and the Owner. Contractor shall submit a Certificate of Design prior to utilizing the parallel system and shall restore the parallel system to pre-construction conditions upon completion of construction.
- G. Contractor shall design, furnish and install individual bypass flow handling systems for flowing lateral connections or high occupancy buildings.
- H. Upon completion of construction, the Contractor shall remove plugging and/or bulkheads in a manner that permits the existing flows to slowly return to pre-construction conditions and prevent surcharging, flooding or causing any other disturbances downstream.

END OF SECTION 02761

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SECTION 02767

CURED-IN-PLACE PIPELINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract Documents apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:

1. Inspecting and measuring the interior of the pipe to be lined.
2. Grout sealing of leaks which may interfere with installation and/or curing of the liners. Sealing shall include all required materials including packers.
3. Provide all plant, labor, equipment and materials as well as performing all operations associated with the installation of cured-in-place pipelining (CIPP) inside the existing pipeline where indicated on the Drawings and in accordance with municipal, state and federal requirements, including OSHA, and these Specifications..
4. Performing the work in a sequence that is the least disruptive to vehicular and pedestrian traffic and in a manner that shall protect the public from damage to persons and property within the limits and for the duration of the work.
5. Handling and disposal of discharge water from the CIPP curing operation.

- B. Related Sections include the following:

1. Section 02210 – Earth Excavation, Backfill, Fill and Grading
2. Section 02760 – Pipeline Cleaning and Internal Inspection
3. Section 02761 – Bypass Flow Handling

1.3 SUBMITTALS

- A. Submit each item in this article according to the conditions of the Contract.

- B. After Notice to Proceed, and before beginning Pre-inspection work in preparation for CIPP construction, the Contractor shall submit:
1. Certification stating that the Contractor is fully licensed by the CIPP manufacturer (if different).
 2. Shop drawings and/or manufacturer's descriptive literature indicating materials, equipment and methods specific to this project to be used to complete CIPP operations.
 - a. Material Safety Data Sheets (MSDS's) for all materials used during preparation and installation.
 - b. Method(s) and equipment for repairs of any uncured areas, defects, and test sample section repairs or other deformities in the completed product.
 - c. Certified copies of all test reports on the material properties of the cured liner by the material manufacturer indicating that the supplied materials conform to the design criteria used in calculating the liner thickness.
 - d. For UV cured CIPP liners provide CIPP System Manufacturer's product specific data for the glass fiber tube for this project; including the maximum allowable pulling force that will not damage the tube or compromise the physical properties of the finished CIPP liner.
 - e. Description of odors anticipated as a result of the curing process and methods to mitigate odors to prevent migration outside of the pipeline.
 - f. Confined Space Entry Certifications for all Contractors' personnel entering pipeline or access structures.
 - g. Name(s) of all supervisory personnel to be directly involved with each cured-in-place pipelining method of pipe rehabilitation for this project. Supervisory personnel shall meet the experience requirements listed under Section 1.4 of this specification. Attach resumes of each person named. Resume information shall include, as a minimum, educational background, the number of years in a supervisory capacity and a list of projects worked on within the past five years, describing the type of construction, project description, complexity, and contract amounts.
 3. A work plan to include the following items:

- a. Details and description of construction methods and any intended variances from the specified methods, materials, equipment, and process description, including on-site or off-site tube wet out, insertion procedure, curing and cool down procedure, access structures and lateral connection details, method of cutting lateral connections, method for sealing ends of liner and lateral cut-outs, water sources and method of cure-water/steam discharge.
 - b. Description of surface activities including access structures, staging and inversion locations.
 - c. A plan for maintaining vehicular and pedestrian access, avoiding damage to existing trees, preventing leakage from hoses, and minimizing noise from pumps.
 - d. A description of the process or technique(s) to be used to progressively round the liner tube to remove all trapped water between the liner pipe and the existing pipe.
 - e. Detailed action plan and description of techniques and equipment used in the event of odor migration into public and/or private property (indoors as well as outdoors).
 - f. Traffic and pedestrian management plan.
 - g. A written description of curing water or steam condensate disposal method, if one of these methods is proposed to be used.
 - h. The name, address, and EPA identification number of the transporter and disposal facility in the event a treatment or disposal facility is used for cure water discharge. Test results and disposal documentation from the facility shall also be submitted.
 - i. The Contractor shall submit method of repair of any rejected inversion/installation length for review and approval by the Owner prior to any such repair or replacement.
- C. After Pre-Inspection, and prior to CIPP installation, the Contractor shall submit:
- 4. Pre-installation inspection videos and reports as specified herein.
 - 5. Design calculations specific to each inversion. The submittal shall provide documentation supporting the basis of the values used in the design calculations. The calculations shall be prepared and stamped by a Professional Engineer registered in the state of Connecticut within which the work shall take place in accordance with the requirements of ASTM F1216. For pulled-in systems, Contractor shall

submit design calculations for the maximum allowable pulling force on tube as well as the type of equipment and monitoring provisions to measure such forces during installation.

6. Curing tables indicating resin\liner manufacturer's recommended water\steam temperature during the cure period; or for UV cure systems the UV lamp firing rate, pull back speed, air pressure, and liner surface temperature for the liner diameter, thickness and length to be installed. Curing tables for UV systems shall specifically indicate the acceptable liner surface temperature range which will assure that the cure will complete.
 7. A certification stating that the sources of all lateral connections identified during internal inspection have been investigated within the pipeline as well as in adjacent buildings and structures and that the Contractor has secured these connections to prevent the migration of odors.
- D. The Contractor shall submit curing logs within 24 hours of cool-down completion for each inversion consisting of the specified monitoring reports from the curing process.
- E. For UV cured CIPP liners the Contractor shall also submit hardening documentation in the form of a contemporaneous logging of the light intensity(s) and length of exposure time as the light train moves along the length of the subject reach of pipe. This log shall also be imprinted with the air pressure maintained inside of the liner during the hardening process. The data shall be recorded in a digital format that is tamper proofed.
- F. The Contractor shall submit final CIPP testing reports and post construction inspection videos and reports after CIPP construction as specified herein.

1.4 QUALITY ASSURANCE

- A. The Contractor installing the CIPP system shall have completed at least three (3) projects, in the United States, within the past two (2) years and projects that included CIPP installation lengths of at least 300 continuous linear feet, on-site or off-site wet-out or resin impregnation of the liner tube, and design and installation of at least 12-inch diameter CIPP with a wall thickness based on a fully deteriorated condition.

Note: A combination of projects satisfying each of the above provisions may be acceptable as long as two (2) projects have been successfully completed for each provision.

- D. Supervisory personnel shall have a minimum of five (5) years experience and shall have completed at least two (2) projects of similar size and complexity

as this project in the United States within the past five (5) years. Resume information shall include, at a minimum, educational background, the number of years in a supervisory capacity and a list of completed projects within the past five (5) years, including project description, complexity and contract total amounts.

- E. Rejection of any subcontractor and/or manufacturer by the Engineer due to insufficient qualifications shall not be grounds for modifications to the Contract Documents such as change in scope, time of completion or contract amount.
- F. Designated supervisory personnel shall be directly involved with and used on this project. Substitutions of personnel will not be allowed without written authorization of the Engineer.
- G. All Contractor's personnel entering pipeline or access structures shall be Confined Space Entry trained per OSHA, Title 29 CFR 1910.46 and shall have a copy of their certification available on site at all times.

1.5 ASTM STANDARDS

- A. CIPP work and materials shall comply with all applicable sections of the following ASTM standards.
 - 1. ASTM D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - 2. ASTM D2412 – Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.
 - 3. ASTM D2990 – Standard Test Methods for tensile, compressive, and flexural creep and creep-rupture of plastics
 - 4. ASTM F1216 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube.
 - 5. ASTM F1743 – Standard Practice for Rehabilitation of Existing Pipelines and Conduits by the Pull in and inflate and Curing of a Resin-Impregnated Tube.
 - 6. ASTM F2561 – 06 Standard Practice for Rehabilitation of a Sewer Service Lateral and Its Connection to the Main Using a One Piece Main and Lateral Cured-in-Place Liner
 - 7. ASTM – D5813 Standard Specification for Cured-in-Place Thermosetting Resin Sewer Pipe

- B. If conflicts exist between the specifications and the above-referenced standards, the more stringent requirements, as determined by the Engineer, shall apply.

1.6 PRODUCTS, MATERIALS AND EQUIPMENT

- A. Provide in accordance with the general provisions of the Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cured-In-Place Liner

1. Designed and constructed in accordance with ASTM F1216 for “Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin-Impregnated Tube”, and these Specifications.
2. The CIPP shall be designed for a life of 50 years or greater.
3. The CIPP shall be continuous and joint-less from manhole to manhole or access point to access point and shall be free of all defects that will affect the long term life and operation of the pipe.
4. The CIPP shall be fabricated to a size that, when installed, shall neatly fit the internal circumference of the existing pipeline. Allowances shall be made for circumferential stretching during installation.
5. The CIPP shall consist of one or more layers of flexible needled felt, or an equivalent woven, non-woven or combination material.
6. The CIPP shall be capable of carrying resin withstanding installation pressures and curing temperatures. Curing the liner shall form a continuous, hard, impermeable, tight-fitting lining between each installed reach.
7. The CIPP shall be sealed with hydrophilic waterstop to terminate CIPP system at each manhole penetration.
 - a. Hydrotite or approved equal.
8. The finished product in place shall meet the minimum chemical resistance requirements for domestic sanitary sewer applications as listed in table X2.1 of ASTM F1216. Exposure shall be for a minimum of 30 days at 73.4°F (23°C). At least three (3) specimens shall be used for each material being tested and for each chemical solution involved. Specimens shall be removed from each chemical

solution and tested. If any specimen fails to meet the 30 days requirements specified herein, the material will be subject to rejection. During this period, CIPP test specimens shall lose no more than 20 percent of their initial flexural strength and flexural modulus when tested in accordance with Section 8 of ASTM F1216.

9. For glass fiber reinforced liner materials, the Contractor shall provide chemical resistance test reports required under ASTM 3681 "Chemical Resistance of 'Fiberglass' (Glass-Fiber, Thermosetting-Resin) Pipe in a Deflected Condition" as indicated herein.
10. The resin shall be corrosion resistant polyester or vinyl ester resin and catalyst system or other approved material compatible with the inversion/installation process that provides cured physical strength properties specified herein. When properly cured within the tube composite the CIPP shall meet the requirements of ASTM F1216, ASTM F1743 or F2019, the physical properties herein, and those which are to be utilized in the design of the CIPP for this project.

B. Lateral Connection Grout Seal

1. The sealing material shall be an acrylamide based gel with a minimum of ten (10) percent acrylamide base material by weight in the total sealant mix. The chemical sealing material shall have a viscosity of approximately two (2) centipoises, which can be increased with additives, and a controllable reaction time from ten (10) seconds to one (1) hour. The application of the sealant shall be through a lateral sealing packer. Joint sealing shall be accomplished by forcing chemical sealing materials through the lateral packer into the surrounding soil through the leaking joint, crack or other lateral defect. Final acceptance of the sealed lateral will be accomplished via an air test of the joint or a visual inspection to verify that water is not leaking through the repaired lateral connection. This lateral connection shall be used solely in areas of infiltration on sewer mains of 8" and greater, as directed by the Engineer.

2.2 DESIGN CRITERIA

A. General

1. The CIPP shall be designed to have sufficient structural strength to support all dead loads, live loads, and groundwater load imposed, with the assumption that the existing pipeline is fully deteriorated and cannot share any loading or contribute to structural integrity of the CIPP.

2. All CIPP shall have a wall thickness that, when tested by the parallel plate deflection method in accordance with ASTM D2412, shall have a minimum pipe stiffness of six (6) psi.
3. The properties of the CIPP, when cured, shall have the following minimum values and shall be verified by ASTM testing as indicated in the table below:

Property	ASTM Test Method	Initial¹ psi	Long Term² psi
Flexural Strength	D790	4,500	NA
Flexural Modulus	D790 & D2990	300,000	150,000

Notes: ¹Initial values are determined by ASTM D790.

²Long term value is defined as fifty (50) years and is determined by ASTM D2990.

4. The lining material shall be a resin-impregnated, flexible polyester felt, glass fiber reinforced plastic or equivalent material tube, matching the diameter of the lateral pipe, which is inserted into the service lateral to be rehabilitated and cured-in-place by an acceptable curing method. The resin shall be suitable for the design conditions as well as the curing process. The liner shall provide a minimum service life of 50 years.
 - A. Design Performance Limits and Design Parameters
 1. The CIPP shall be designed such that the lining shall not fail, collapse, buckle, crack or delaminate under load. The maximum long-term fifty (50) years calculated deflection under all loads shall not exceed five (5) percent. For glass fiber reinforced liner pipe, the bending strain fifty (50) years developed shall not exceed the higher of the minimum long-term value in ASTM D3262 for the pipe stiffness supplied or that substantiated by long-term strain tests done in accordance with ASTM D3681 using 1.0 N sulfuric acid.
 - B. The following design parameters shall be used and all criteria shall apply to each CIPP installations:

Depth of Cover Above Crown of Pipe ¹	The greatest of actual depth for each pipe reach
Depth of Groundwater Above Crown (Perm.)	Ground Surface
Specific Weight of Soil	120 pcf
Wheel Load ²	16,000 lbs.
Railroad Load ³	N/A
Temperature	80° F
Deflection Lag Factor, D _L	1.0 (Initial) 1.5 (50 years)
Modulus of Soil Reaction E'	1,200 psi
Ovality Correction Factor	2%.
Long Term Modulus of Elasticity	50 years under constant stress, when submerged in water, to be used for constrained buckling resistance design for combined external loads from groundwater and earth cover.
Minimum Factor of Safety (Perm.)	2.0, unless otherwise specified
Bedding Deflection Coefficient	0.103
Manning's Roughness Coefficient, n	0.010

Notes: ¹Design of the CIPP shall be based on prism load on the liner pipe, using the outside diameter of the liner in the calculations.

²Impact factors to be included when depth of cover is less than three (3) feet per values recommended by AASHTO.

³Impact factors to be included when depth of cover is less than ten (10) feet per criteria established by AREA "Manual of Recommended Practice".

- C. The minimum thickness of the CIPP shall be as determined for the design parameters imposed. Calculations for the determination of the required liner pipe stiffness shall be the largest pipe stiffness for each CIPP installation reach (inversion/installation access structure to termination point), as determined by calculations provided for the following parameters: (1) Maximum Deflection; (2) Minimum Pipe Stiffness; (3) Ring Bending Strain; and (4) Constrained Buckling Resistance Using Long Term Modulus of Elasticity. The design calculations shall consider all cases of loading to the CIPP and the liner thickness required shall withstand these loads without collapsing.
- D. The Owner shall have the right to modify/change the required liner thickness, depending upon field conditions evident from the videotape(s). An analysis of design criteria and calculations for the liner thickness, if different, shall be provided to the Engineer for approval, whose decision approved in writing by the engineer prior to the commencement of the work.
- E. Point repairs shall be defined as repairs to the existing pipeline that are required to facilitate renewal work. Point repairs shall be identified during internal inspection. The Contractor shall perform point repairs after cleaning

and preinstallation internal inspection has been complete. The Contractor shall notify the Engineer not less than 48 hours in advance of making any such point repairs.

PART 3 - EXECUTION

3.1 GENERAL

- A. Contractor shall perform all work in accordance with municipal, state and federal requirements.
- B. Contractor shall obtain all permits required to perform work prior to the commencement of construction.
- C. The length of the CIPP shall equal the length indicated on the Drawings unless otherwise directed by the Engineer. The Contractor shall verify the internal pipe diameter/dimension(s) and lengths in the field prior to liner manufacture.
- D. All work associated with CIPP operations shall be accomplished without excavation from existing ground surface, except in areas specifically designated on the Drawings or as approved by the Owner.
- E. Individual inversions/installations may be performed via one or more existing access structures as determined by the Contractor and as approved by the Owner.
- F. Excavation for point repairs or emergencies shall be permitted, but only as approved by the Owner.
- G. Contractor shall review all existing conditions data prior to the commencement of construction including TV logs attached in the appendices of these Specifications.
- H. Contractor shall inspect clean and CCTV the existing pipe prior to commencement of CIPP operations, including flow diversion as necessary, and provide the Engineer the opportunity to verify the condition of the pipe for CIPP operations.
- I. Contractor shall commence CIPP operations at the beginning of a period of at least 24- hours of anticipated dry weather or otherwise directed by the Owner and as directed by the Engineer.

3.2 PREPARATION

A. Cured-in-Place Liner

1. Contractor shall perform all preparation operations in accordance with Section 02760 and Section 02761.
2. Contractor shall notify all abutters via written notice of the upcoming work two business days prior to work taking place. The written notice shall be submitted for approval by the Engineer.
3. Contractor shall inspect interior of the pipelines to determine locations of any conditions which may prevent proper installation of the liner. Inspections shall note protruding service taps, collapse/crushed pipe and reductions in cross-sectional area that could impact lining of the pipe.
4. Contractor shall clear the line of obstructions such as solids, dropped joints, protruding lateral connections or collapsed pipe that will hinder the installation. If inspection reveals an obstruction that cannot be removed by conventional cleaning equipment, then the Contractor shall make a “point repair” excavation to uncover and remove or repair the obstruction. Such excavation shall be approved in writing by the Engineer prior to the commencement of the work. Point repairs shall be defined as repairs to the existing pipeline that are required to facilitate renewal work. Point repairs shall be identified during internal inspection. The Contractor shall perform point repairs after cleaning and pre-installation internal inspection has been complete. The Contractor shall notify the Engineer not less than 48 hours in advance of making any such point repairs.
5. Contractor shall grout seal visible leaks prior to installation of the liner material.
6. Contractor shall investigate and determine the purpose and source of all lateral connections. Methods shall include, but are not limited to, internal inspections within adjacent buildings, smoke testing and dye testing. Contractor shall record location, size, material and relative invert elevation of each lateral connection with respect to the pipeline. Contractor shall note presence of floor drains or other outlet pipes in adjacent buildings. Contractor shall obtain written approval from the Owner and property owner(s) prior to any testing and/or building entry. Contractor shall verify that lateral connections have been installed according to plumbing codes and have traps to prevent the migration of odors into buildings. The contractor shall reestablish only active laterals and laterals for unoccupied, abandoned or vacant lots unless otherwise directed by the Engineer.

3.3 INSTALLATION

A. Cured-in-Place Liner

1. Contractor shall install a resin impregnated flexible tube inverted/installed into the existing pipe utilizing a vertical inversion standpipe and hydrostatic head method, air pressure inversion method, pulled-in and inflate method or other method approved by the Engineer.
2. Curing shall be accomplished by circulating hot water, steam or other approved methods to cure the resin into a hard, impermeable pipeline. When cured, the new material shall extend over the length of the inversion/installation reach in a continuous, tight-fitting, watertight pipe-within-a-pipe.
3. The Contractor shall designate the locations where the reconstruction tube will be vacuum impregnated prior to installation. The Contractor shall allow the Engineer and the Owner to inspect the materials and “wet-out” procedure. A catalyst system compatible with the resin and reconstruction tube shall be used.
4. The wet-out reconstruction tube shall be inserted through an existing access structure or other access point by approved techniques/processes of the Contractor. Tubes that are pulled in place shall be done in a manner that shall not damage the tube. The winch shall be equipped with a dynamometer to record the pulling forces required during installation. Pull forces shall not exceed manufacturer’s recommendations that shall be based on a maximum longitudinal stretch of five (5) percent of the total tube length. Inversion heads for tubes that are inverted in place shall not exceed manufacturer’s recommendations so as not to overstress the tube material or exceed 5% longitudinal stretch. Progressive rounding of the liner shall be performed, prior to curing, to eliminate all trapped water between the liner and the existing pipeline. The Contractor shall describe the process or technique(s) to be used to progressively round the liner tube to remove all trapped water between the liner pipe and the existing pipe.
5. After inversion/installation is completed, the Contractor shall supply a suitable heat source and fluid recirculation equipment or other approved methods. The equipment shall be capable of delivering hot water/steam throughout the section by means of a pre-strung hose to uniformly raise the water/steam temperature above the temperature required to affect a cure for the resin. This temperature shall be determined by the CIPP manufacturer and based on the resin/catalyst system employed.

6. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing water/steam supply. Another such gauge shall be placed between the impregnated reconstruction tube and the pipe invert at the terminating manhole to determine the temperatures during cure. Water/steam temperature in the line during the cure period shall be recommended by the resin manufacturer.
7. Initial cure shall be deemed to be completed when inspection of the exposed portions of cured liner appear to be hard and sound and the remote temperature sensor indicates that the temperature is of a magnitude to realize an exotherm. The cure period shall be of a duration recommended by the resin manufacturer, as modified for the CIPP process, during which time the recirculation of the water/steam and cycling of the heat exchangers to maintain the temperature continues. Curing temperatures and duration shall be in accordance with previously submitted data and information.
8. The Contractor shall cool the hardened pipe to a temperature below 100 degrees F before relieving the static head. Cool-down may be accomplished by the introduction of cool water or air, as applicable, into the inversion standpipe to replace water being drained from a small hole made in the downstream end. If Contractor elects to drain cure-water via the upstream end, the water shall be pumped to a discharge location approved by the Owner at no additional cost to the Owner. Care shall be taken in the release of the static head so that a vacuum shall not develop that could damage the newly installed pipeline.
9. After completion of pipeline curing, the Contractor shall dispose of curing water in accordance with all federal, state, and local requirements. Curing water or condensate discharged to a municipal or a Borough of Naugatuck sewer shall be in accordance with the requirements of Borough of Naugatuck Sewer Use Regulations.
10. The Contractor shall note the time requirements that may be needed for approval by Borough of Naugatuck. The point of discharge to the Borough of Naugatuck sewer system shall be designated by the Borough of Naugatuck Wastewater Treatment Plant Superintendent. Alternatively, the Contractor may elect to transport the curing water off site for disposal utilizing a uniform hazardous waste manifest. The transporter shall be appropriately licensed and the disposal facility shall be a licensed wastewater treatment facility. The Contractor shall sample and analyze appropriate samples as required by the disposal facility.

11. Contractor shall verify with the Owner that discharging the cure-water directly into the existing system is acceptable. If deemed unacceptable, Contractor shall collect and pump cure-water to a location to be determined by the Contractor and approved by the Owner.
12. Contractor shall mitigate all odors onto public or private property due to renewal operations immediately after notification from the Owner or the Engineer including, but not limited to, forced-air ventilation and/or chemical cleaning of buildings at no additional cost to the Owner.
13. If odors persist on public or private property to a point that air sampling and/or associated testing is required by the Owner, the Engineer or a regulatory agency, the Contractor shall perform this work at no additional cost to the Owner.
14. Contractor shall repair all uncured areas, defects, test sample section repairs or other deformities in the liner during inversion operations in accordance with the manufacturer's recommendations.
15. The finished CIPP shall be continuous over the entire length of an inversion/installation run and be as free as commercially practicable from visual defects such as foreign inclusions, dry spots, pinholes, wrinkles, blisters, delamination or other deformities. Any such conditions deemed by the Owner shall be repaired and/or replaced at no additional cost to the Owner.

3.4 SYSTEM REINSTATEMENT

- A. Once a section of liner has been cured completely, the Contractor shall reinstate all access structures located along its alignment. For intermediate access structures, the Contractor shall cut the top portion of the liner to match the opening in the riser section providing a smooth, clean cut and continuous transition. At inversion/installation or termination access structures, the Contractor shall extend the liner a sufficient distance into the structure to allow for a smooth, clean cut to match the configuration of the riser and base sections. The CIPP shall make a tight fitting seal with the existing pipe(s) in the manhole. This shall be accomplished with the use of a mechanical seal for oval pipes or grout specifically designed for this purpose, both of which shall be approved by the Engineer. The top half of the pipe shall be neatly cut off, and not broken or sheared off, at least four (4) inches away from the walls. The channel in the manhole shall be a smooth continuation of the pipe(s) and shall be merged with other lines or channels, if any. Channel cross-section shall be U-shaped, with a minimum height of half pipe diameter to three-fourths of the pipe diameter for fifteen (15) inches or larger. The side of the channels shall be built up with mortar/concrete to provide benches at a maximum of 1 in 12 pitch towards the channel. Any nominal annular gap

between the liner and the host pipe shall be filled with a resin mixture and/or epoxy compatible with the CIPP liner and the terminated ends of the liner shall be beveled to allow for a smooth transition.

- B. Lateral connections shall be reestablished with a cutting device specifically designed for cutting CIPP. The Contractor shall reestablish only active laterals and laterals for unoccupied, abandoned or vacant lots unless otherwise directed by the Engineer. The Contractor shall determine exact location and number of lateral connections to be reestablished during the internal inspection(s) and/or in the field using as smoke testing, dye testing, and internal inspection and/or building investigations as necessary. The Contractor's shall ensure that all active service connections are reconnected. Shape of pipeline cut-out shall match shape of lateral connection. The annular space between the liner pipe and the lateral connection shall be sealed with a resin mixture and/or epoxy compatible with the CIPP.

Lateral connections in areas of infiltration, as determined by the engineer, shall be reestablished using a lateral seal as directed by the engineer.

- C. Lateral connections shall be reinstated by experienced operators so that no blind attempts are made in the liner. Location shall be re-verified carefully with pre-construction videotapes for accuracy, especially where dimples are not defined or clearly ascertained. The cut shall be smooth and circular with no jagged edges. The hole shall be a maximum of 100 percent and a minimum of 95 percent of the lateral pipe inside diameter. It shall be properly aligned and be concentric to the existing connection.
- D. The Contractor shall minimize the time that an inversion/installation access point remains open. Consideration shall be provided to complete and coordinate all work including pipeline cleaning, pre installation internal inspection, pipeline renewal and post installation internal inspection to minimize disturbance to adjacent property owners.

3.5 TESTING

A. Cured-in-Place Liner

1. For every 500 linear feet of length of CIPP installed, the Contractor shall prepare at least one (1) sample in accordance with ASTM F1216, Section 8.1.1 or Section 8.1.2 for testing at a laboratory approved by the Engineer. For samples used per section 8.1.1, the Contractor shall hold the pipe in place by a suitable heat sink, otherwise this method will not be acceptable.
2. If flat plate samples are used for testing, the samples shall be taken from a section of the length of CIPP to be installed. Flat plate samples cured by a suitable heat sink and tested in accordance with ASTM 1216, section 8.1 shall be considered as passing if they exceed

the design value criteria. Flat plate samples cured in the downtube or in the silencer in accordance with ASTM F1216, Section 8.1 shall be considered as passing the design value criteria if the arithmetic mean of the tested samples, as defined in ASTM D790, is greater than or equal to parameters set forth in this Section after the arithmetic means is reduced to 80% of its original calculated value.

3. The Contractor shall provide one sample for each inversion to the Engineer for independent testing. The samples shall be labeled with each pipe inversion identification and date.
4. Samples secured as specified shall be tested to verify that the pipe flexural modulus and flexural strength of the CIPP is at least equal to that required by the approved design submittal, and the wall thickness is at least equal to that required in the approved design submittal. Wall thickness shall be verified at each inversion, intermediate manholes, and termination access at four equidistant points around the perimeter.
5. If any sample fails the verification tests specified, the Contractor shall take five (5) additional samples throughout the length of the inversion/installation and retested to ensure the specified criteria has been met. If any sample fails these retests, the entire inversion/installation length shall be rejected.
6. Any rejected inversion/installation shall be relined or replaced by the Contractor at no additional cost to the Owner. The Contractor shall submit method of repair of the rejected inversion/installation length for review and approval by the Owner prior to constructing any repair work. Any samples taken from within the final completed liner pipe shall be repaired by the Contractor, in accordance with the shop drawings, at no expense to the Owner.
7. Contractor shall submit curing water or condensate test reports as required by discharge permit requirements.
8. Contractor shall submit the names, address, and EPA identification number of the transporter and disposal facility in the event a treatment or disposal facility is used for cure water discharge. Test results and disposal documentation from the facility shall also be submitted.

3.6 ACCEPTANCE

A. Cured-in-Place Liner

1. Prior to final acceptance, any defects that may affect the integrity or strength of the pipeline in the opinion of the Engineer shall be repaired by the Contractor at no additional cost to the Owner.

Wrinkles or fins in the bottom half of the lined pipe shall not exceed 2% of nominal pipe diameter and shall not have an adverse effect on the flow. If in excess, the liner shall be repaired and/or removed and replaced at no additional cost to the Owner.

2. Pipeline shall be true to line and grade, with no bulges, sags, protrusions, wrinkles transverse to the flow, deflections, offset joints, leaking joints, or other visible infiltration, or other defects that would impair the intended use of the completed pipeline.
3. Final acceptance of work shall not be granted until all defective areas are repaired in accordance with the CIPP manufacturer's recommendations and to the Owner's satisfaction.
4. Any repairs required by the Engineer as a result of the post construction internal inspection shall be performed by the Contractor.
5. Contractor shall perform a post construction internal inspection in accordance with Section 02760. Final acceptance of the work shall not be granted until post installation inspection has been reviewed and approved by the Engineer.
6. Contractor shall perform testing as specified. Final acceptance of the work shall not be granted until the appropriately formatted testing results have been reviewed and approved by the Engineer.

END OF SECTION 02767

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SECTION 03346

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. This section includes the following:
 - 1. Specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes. Headwall slabs, cut-off walls, and wherever cast-in-place concrete is indicated.

1.3 SUBMITTALS

- A. Shop Drawings:
 - 1. Product Data: For each type of manufactured material and product indicated.
 - 2. Design Mixes: For each concrete mix.
 - 3. Steel Reinforcement Shop Drawings: Include material, grade, bar schedules, stirrup spacing, bent bar diagrams, arrangement, and supports of concrete reinforcement.
 - 4. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
 - a. Cementitious materials and aggregates.
 - b. Form materials and form-release agents.
 - c. Steel reinforcement and reinforcement accessories.
 - d. Admixtures.
 - e. Curing materials.
 - f. Ready-mix concrete producer.
 - g. Repair materials.

1.4 QUALITY ASSURANCE

- A. Ready Mix Producer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- B. Testing Agency Qualifications: Contractor shall employ a testing agency, acceptable to the Engineer and qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
- C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.
- D. ACI Publications: Comply with the following, unless more stringent provisions are indicated:
 - 1. ACI 301, "Specification for Structural Concrete."
 - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Provide in accordance with the general provisions of the Contract Documents.
- B. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch (19 by 19 mm), minimum.
- D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

- E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Wire: ASTM A 82, as drawn.
- C. Plain-Steel Welded Wire Fabric: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.

2.3 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete.

2.4 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type II.
- B. Normal-Weight Aggregate: ASTM C 33, uniformly graded.
- C. Water: Potable and complying with ASTM C 94.

2.5 ADMIXTURES

- A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
- B. Air-Entraining Admixture: ASTM C 260.
- C. Water-Reducing Admixture: ASTM C 494, Type A.
- D. High-Range, Water-Reducing Admixture (Superplasticizer): ASTM C 494, Type F.
- E. Water-Reducing and Accelerating Admixture: ASTM C 494, Type E.
- F. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.6 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete. This product shall not be used as a substitutiom for curing compounds.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth weighing approximately 9 oz./sq. yd. dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film.
- D. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.7 CONCRETE MIXES

- A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
 - 1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.
 - 2. Fly ash shall not be used.
- B. Concrete mixes shall be designed for the classes indicated below and in accordance with the requirements indicated.

Design Mix Schedule				
Class	Specified Compressive Strength (psi)	Minimum Cement Content (lb/cy)	*Maximum Water/Cementitious Ratio	% Air Entrainment
A	4,000	565	0.50	5.5+/-1
B	2,000	N/A	0.76	N/A

* Total water in mix at time of mixing, including free water in aggregates.

- 1. Mix Classifications: The design mix classes indicated above shall be used as indicated on the Drawings and as follows:
 - Class A: Use in all areas, unless Class B is indicated.
 - Class B: Wherever low strength concrete fill is indicated.
- C. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement of 1” to 4”.
- D. Admixtures: Subject to Engineer’s approval, use admixtures according to manufacturer's written instructions.

2.8 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94 and ASTM C 1116, and furnish batch ticket information.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads. Tolerance limits shall be per ACI 117 and surface irregularities per ACI 347R.
- B. Fabricate forms for easy removal without hammering or prying against concrete surfaces.
- C. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- D. Retighten forms and bracing before placing concrete, to prevent mortar leaks and maintain proper alignment.
- E. Coat contact surfaces of forms with form-release agent.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork, for sides of beams, walls, columns, and similar parts of the Work, that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F (10 deg C) for 48 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Clean and repair surfaces of forms to be reused in the Work.

3.4 SHORES AND RESHORES

- A. Comply with ACI 318 (ACI 318M), ACI 301, and recommendations in ACI 347R for design, installation, and removal of shoring and reshoring.

3.5 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials.
- C. Accurately position, support, and secure reinforcement against displacement.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.
- E. Install welded wire fabric in longest practicable lengths on bar supports spaced to minimize sagging and lap edges and ends of adjoining sheets at least one mesh spacing.

3.6 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated.
 - 2. Form using bulkhead forms with keys, unless otherwise indicated.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement, unless approved in writing by Engineer.
- C. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.
- D. Deposit concrete in forms in horizontal layers to avoid cold joints.
 - 1. Limit drop height of concrete off of chute to 60-inches (1500mm).
 - 2. Use equipment and procedures for consolidating concrete recommended by ACI 309R.
- E. Cold-Weather Placement: Comply with ACI 306.1.

- F. Hot-Weather Placement: Place concrete according to recommendations in ACI 305R.

3.8 FINISHING FORMED SURFACES

- A. The finish of formed surfaces shall proceed concurrently with, or immediately after the repair of surface defects. The selection of finishes shall be as indicated in the table below.

Concrete Finishes (Formed Surfaces) Location	Finish
Concrete surfaces not exposed to view	Rough-Formed Finish
Concrete surfaces exposed to view.	Smooth-Formed Finish

- B. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched.
- C. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch (3 mm) in height.

3.9 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.
- B. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the following methods:
- C. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, by one or a combination of the following methods:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions.

3.10 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas. Submit proposed methods of repair to Engineer for review and approval. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor shall employ qualified independent testing and inspecting agency to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete, plus one set for each additional 50 cu. yd. (38 cu. m) or fraction thereof.
 2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix.
 3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F (4.4 deg C) and below and when 80 deg F (27 deg C) and above, and one test for each composite sample.
 5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
 6. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of four standard cylinder specimens for each composite sample.

- 7. Compressive-Strength Tests: ASTM C 39; test one laboratory-cured specimen at 7 days, two at 28 days, and one at 56 days.
- C. Test results shall be reported in writing via FAX to Engineer, Owner, concrete manufacturer, and Contractor within 48 hours of testing.
- D. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer.

END OF SECTION 03346

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APPENDIX A - CCTV INSPECTION LOGS

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*CCTV Inspection of Sewers
In the Borough of
Naugatuck, CT*

12/20/2016 – 12/21/2016

Kleinfelder

NATIONAL WATER MAIN CLEANING CO.
Specializing in today's needs for environmental protection





The Environmental
Protection Specialists

National Water Main Cleaning
1000R Elm Street
Rocky Hill, CT 06067
Tel: 860.372.4199
Fax: 781.828.2473
E-mail: jim@nwmcc-bos.com

Project Information

Project name :
KLE003-6 Merged

Project No. :

Contact :

Date :
8/26/2016

Client: **Kleinfelder**
Contact Name: **Mr. Nick Keenan, PE**
Department: **Project Professional**
Po Box:
Street: **500 Enterprise Drive, Suite 4B**
City: **Rocky Hill, CT**
Telephone: **860.563.7775**
Fax:
Mobile: **860.670.8920**
E-mail: **NKeenan@kleinfelder**

Site:
Contact Name:
Department:
Po Box:
Street:
City:
Telephone:
Fax:
Mobile:
E-mail:

Contractor **National Water Main Cleaning**
Contact Name: **Mr. Jim Falconieri**
Department: **Senior Project Manager**
Po Box:
Street: **1000R Elm Street**
City: **Rocky Hill, CT 06067**
Telephone: **860.372.4199**
Fax: **781.828.2473**
Mobile:
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The Environmental
Protection Specialists

National Water Main Cleaning
1000R Elm Street
Rocky Hill, CT 06067
Tel: 860.372.4199
Fax: 781.828.2473
E-mail : jim@nwmcc-bos.com

Defect Grade Description

Project Name :
KLE003-6 Merged

Project number :

Contact :

Date :
8/26/2016

1:

Excellent Condition

Minor Defects- Failure unlikely in the foreseeable future

2:

Good Condition

Defects that have not begun to deteriorate- Pipe unlikely to fail for at least 20 years.

3:

Fair Condition

Moderate defects that will continue to deteriorate- Pipe may fail in 10-20 years.

4:

Poor Condition

Severe Defects that will become Grade 5 defects within the foreseeable future- Pipe will probably fail in 5-10 years

5:

Immediate Attention

Defects require immediate attention- Pipe has failed or will likely fail within the next 5 years or sooner.



The Environmental Protection Specialists

National Water Main Cleaning
 1000R Elm Street
 Rocky Hill, CT 06067
 Tel: 860.372.4199
 Fax: 781.828.2473
 E-mail: jim@nwmcc-bos.com

Inspection Report

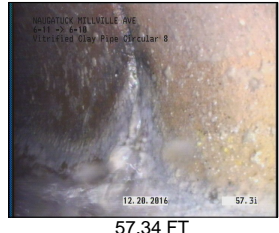
Date 12/20/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 50
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning Jetting	Sewer Category

Street MILLVILLE AVE	Use of Sewer Sanitary	Upstream MH 6-11
City NAUGATUCK	Drainage Area	Dowstream MH 6-10
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 221.17 ft	Section Length 221.17 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Vitrified Clay Pipe
Tape / Media No. 57-122016-1	Lining Method

Add. Information :

1:540	Position	Code	Observation	Grade
	0.00	AMH	Upstream Manhole, Survey Begins	
	27.32	DAE	Deposits Attached Encrustation, 5 %of cross sectional area, from 03 to 05 o'clock, , within 8 inches of joint: YES	M 2
	27.32	RFJ	Roots Fine Joint, at 09 o'clock, within 8 inches of joint: YES	M 1
	37.33	RBJ	Roots Ball Joint, at 09 o'clock, 55 %, within 8 inches of joint: YESR	M 4
	37.43	RBJ	Roots Ball Joint, at 03 o'clock, 55 %, within 8 inches of joint: YESR	M 4
	53.34	RFJ	Roots Fine Joint, at 10 o'clock, within 8 inches of joint: YES	M 1
	57.34	IR	Infiltration Runner, at 04 o'clock, within 8 inches of joint: YES	M 4
	127.80	DAE	Deposits Attached Encrustation, 5 %of cross sectional area, from 09 to 03 o'clock, , within 8 inches of joint: YES	M 2
	136.00	DAE	Deposits Attached Encrustation, 5 %of cross sectional area, at 09 o'clock, , within 8 inches of joint: YES	M 2
	168.13	DAE	Deposits Attached Encrustation, 5 %of cross sectional area, from 02 to 04 o'clock, , within 8 inches of joint: YES	M 2
	172.13	DAE	Deposits Attached Encrustation, 5 %of cross sectional area, at 03 o'clock, , within 8 inches of joint: YES	M 2
	199.75	JOM	Joint Offset Medium	S 1
	199.85	RFJ	Roots Fine Joint, from 10 to 02 o'clock, within 8 inches of joint: YES	M 1
	209.96	RFJ	Roots Fine Joint, from 10 to 02 o'clock, within 8 inches of joint: YES	M 1





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Inspection Report

Date	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No.
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Cleaned : Jetting	Sewer Category

1:540	Position	Code	Observation	Rate			
		AMH	Downstream Manhole, Survey Ends				
QSR 1100	QMR 4325	SPR 1	MPR 26	OPR 27	SPRI 1	MPRI 2.17	OPRI 2.08



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Inspection photos

City : NAUGATUCK	Street : MILLVILLE AVE	Date :	Pipe Segment Reference :	Section No : 50
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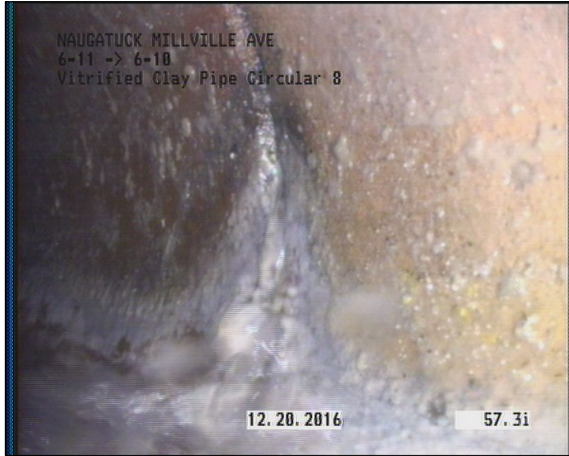


Photo: 50_6-11_6-10_20122016_D_IR_57.3439_110931.JPG,
VCR No.: 57-122016-1, 00:00:00
57.34FT, Infiltration Runner, at 04 o'clock, within 8 inches of
joint: YES



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Inspection Report

Date 12/20/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 51
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning Jetting	Sewer Category

Street MILLVILLE AVE	Use of Sewer Sanitary	Upstream MH 6-10
City NAUGATUCK	Drainage Area	Downstream MH 6-10A
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 34.43 ft	Section Length 34.43 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dir./Height 8 inch
Year Rehabilitated	Material Cast Iron
Tape / Media No. 57-122016-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



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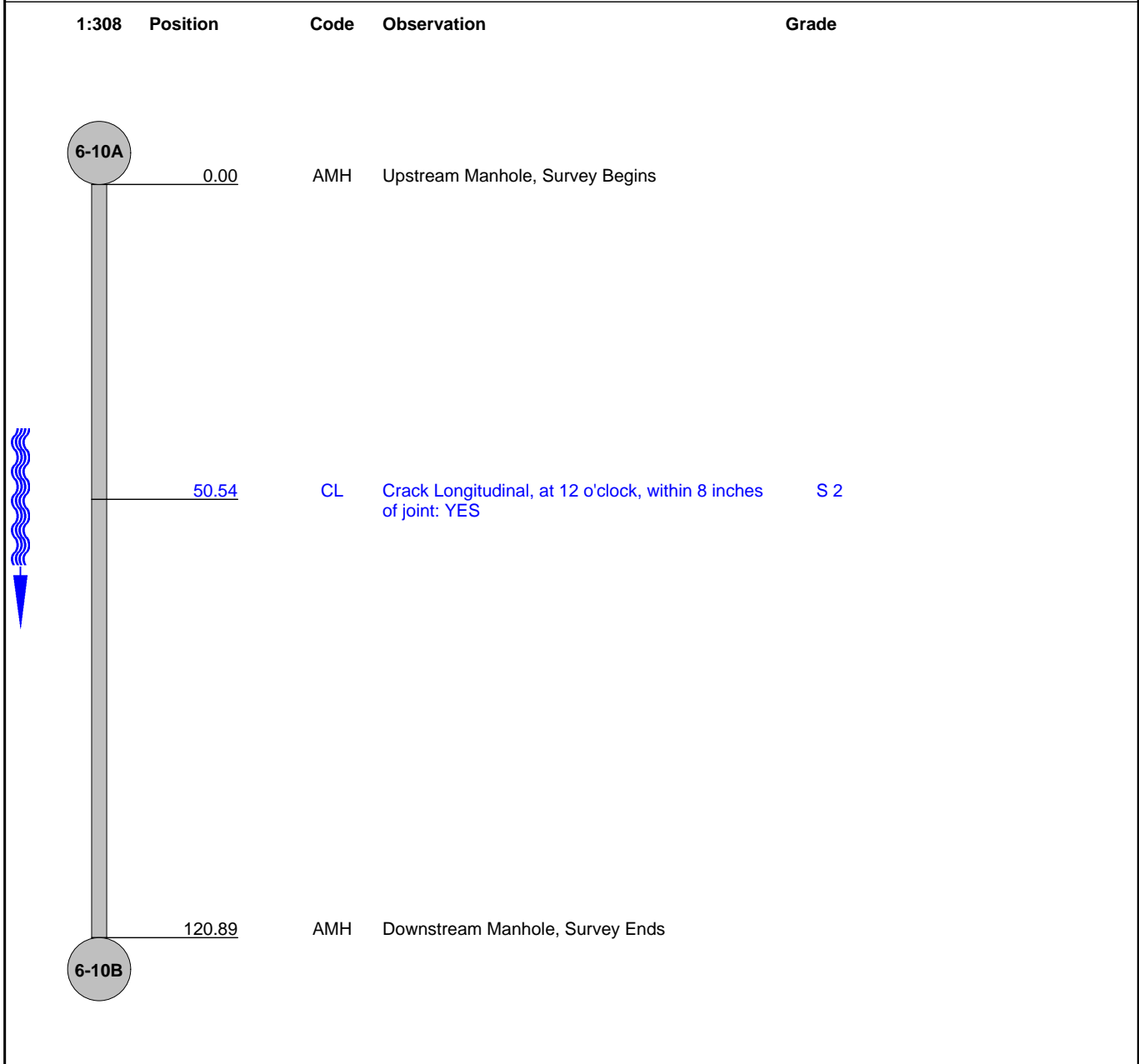
Inspection Report

Date 12/20/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 52
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning Jetting	Sewer Category

Street MILLVILLE AVE	Use of Sewer Sanitary	Upstream MH 6-10A
City NAUGATUCK	Drainage Area	Downstream MH 6-10B
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 120.89 ft	Section Length 120.89 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Polyvinyl Chloride
Tape / Media No. 57-122016-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
2100	0000	2	0	2	2	0	2



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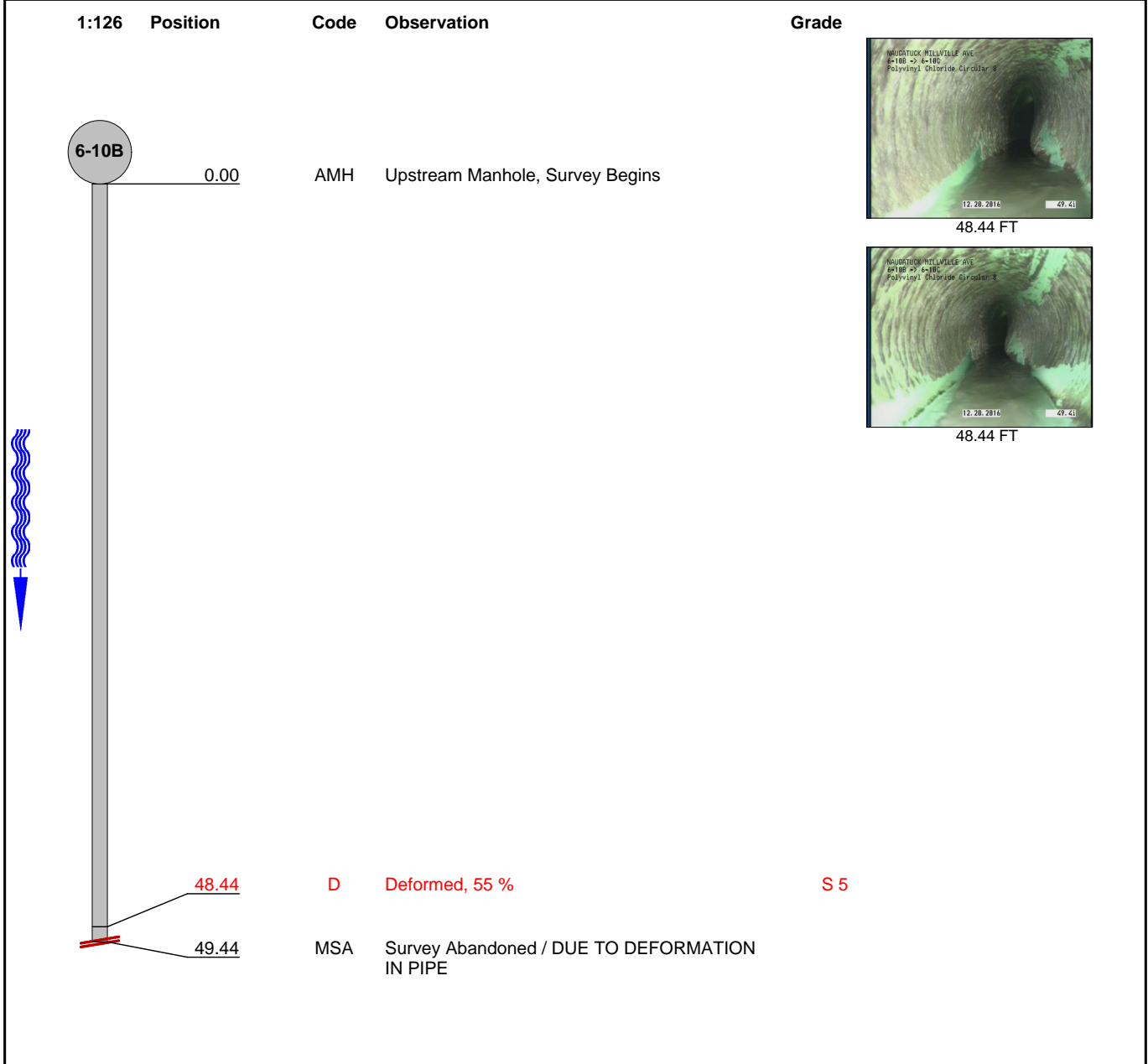
Inspection Report

Date 12/20/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 53
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning Jetting	Sewer Category

Street MILLVILLE AVE	Use of Sewer Sanitary	Upstream MH 6-10B
City NAUGATUCK	Drainage Area	Downstream MH 6-10C
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 49.44 ft	Section Length 49.44 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Polyvinyl Chloride
Tape / Media No. 57-122016-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	0000	5	0	5	5	0	5



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Inspection photos

City : NAUGATUCK	Street : MILLVILLE AVE	Date :	Pipe Segment Reference :	Section No : 53
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Photo: 53_6-10B_6-10C_20122016_D_D_48.44_131134.JPG,
VCR No.: 57-122016-1, 00:00:00
48.44FT, Deformed, 55 %



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VCR No.: 57-122016-1, 00:00:00
48.44FT, Deformed, 55 %



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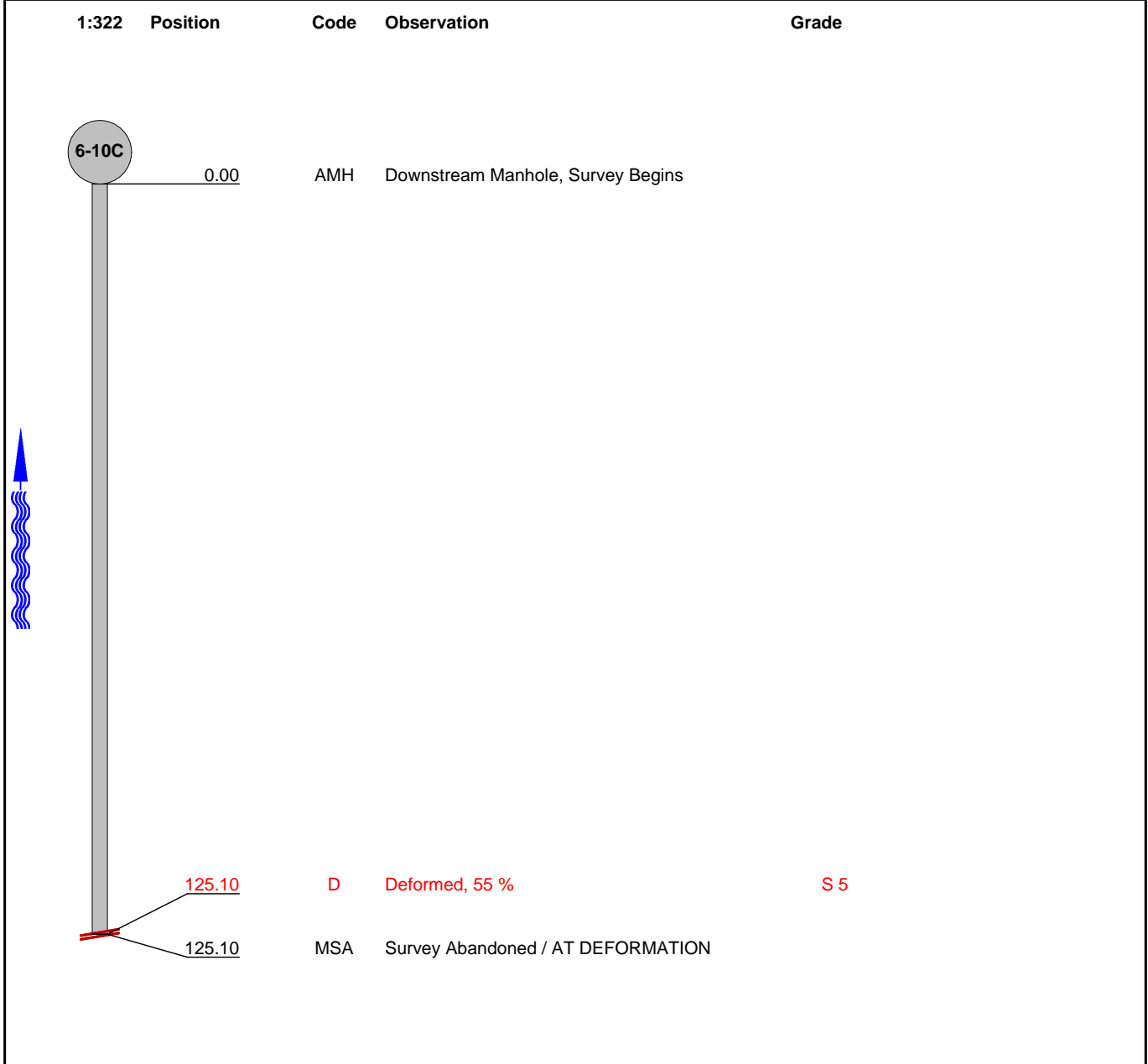
Inspection Report

Date 12/20/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 54
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning Jetting	Sewer Category

Street MILLVILLE AVE	Use of Sewer Sanitary	Upstream MH 6-10B
City NAUGATUCK	Drainage Area	Downstream MH 6-10C
Loc. details	Flow Control Not Controlled	Dir. of Survey Upstream
Location Code	Length surveyed 125.10 ft	Section Length 125.10 ft

Purpose of Survey Reversal	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Polyvinyl Chloride
Tape / Media No. 57-122016-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
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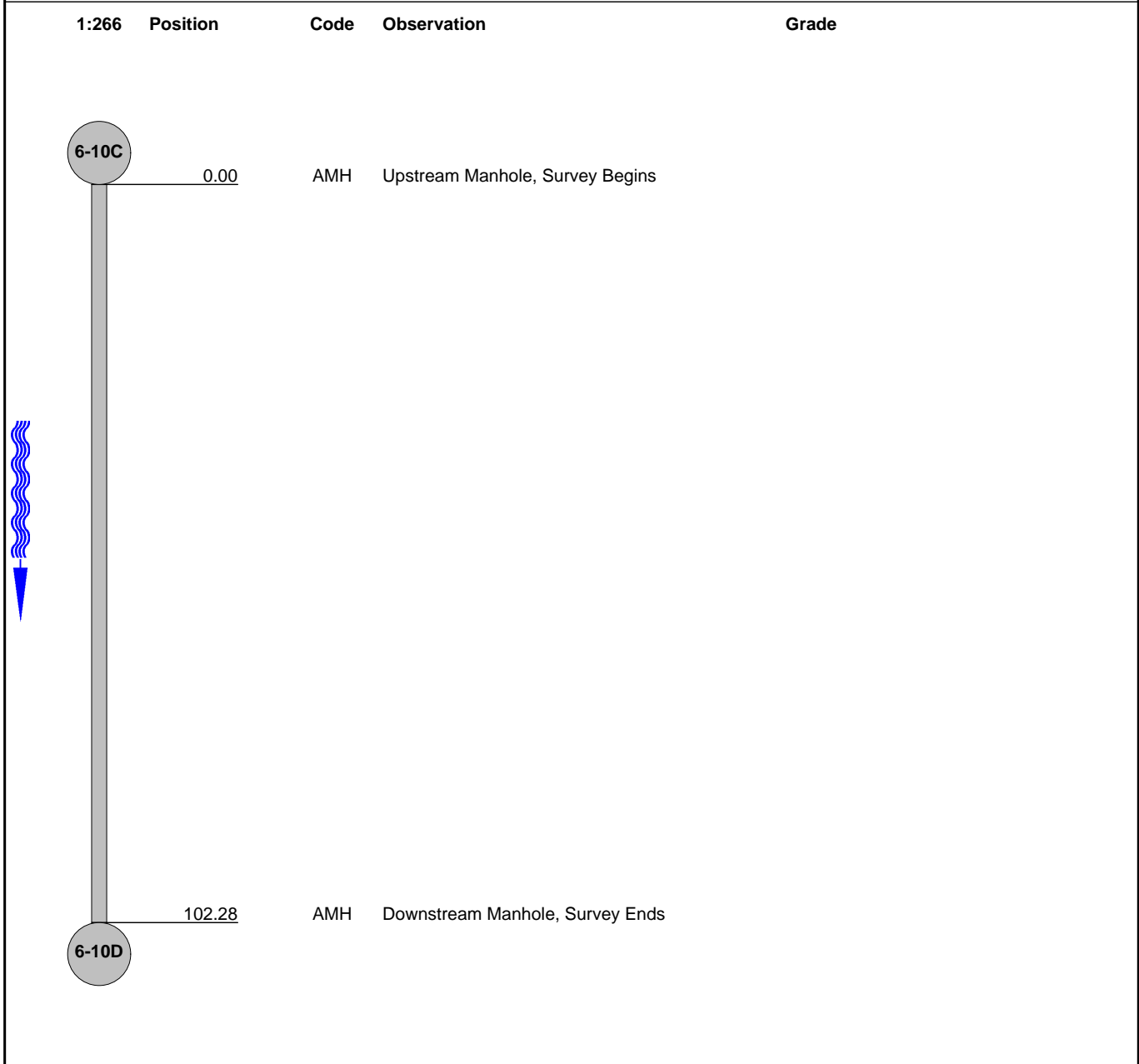
Inspection Report

Date 12/20/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 55
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning Jetting	Sewer Category

Street MILLVILLE AVE	Use of Sewer Sanitary	Upstream MH 6-10C
City NAUGATUCK	Drainage Area	Downstream MH 6-10D
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 102.28 ft	Section Length 102.28 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	8 inch
Year Rehabilitated	Material Polyvinyl Chloride
Tape / Media No. 57-122016-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



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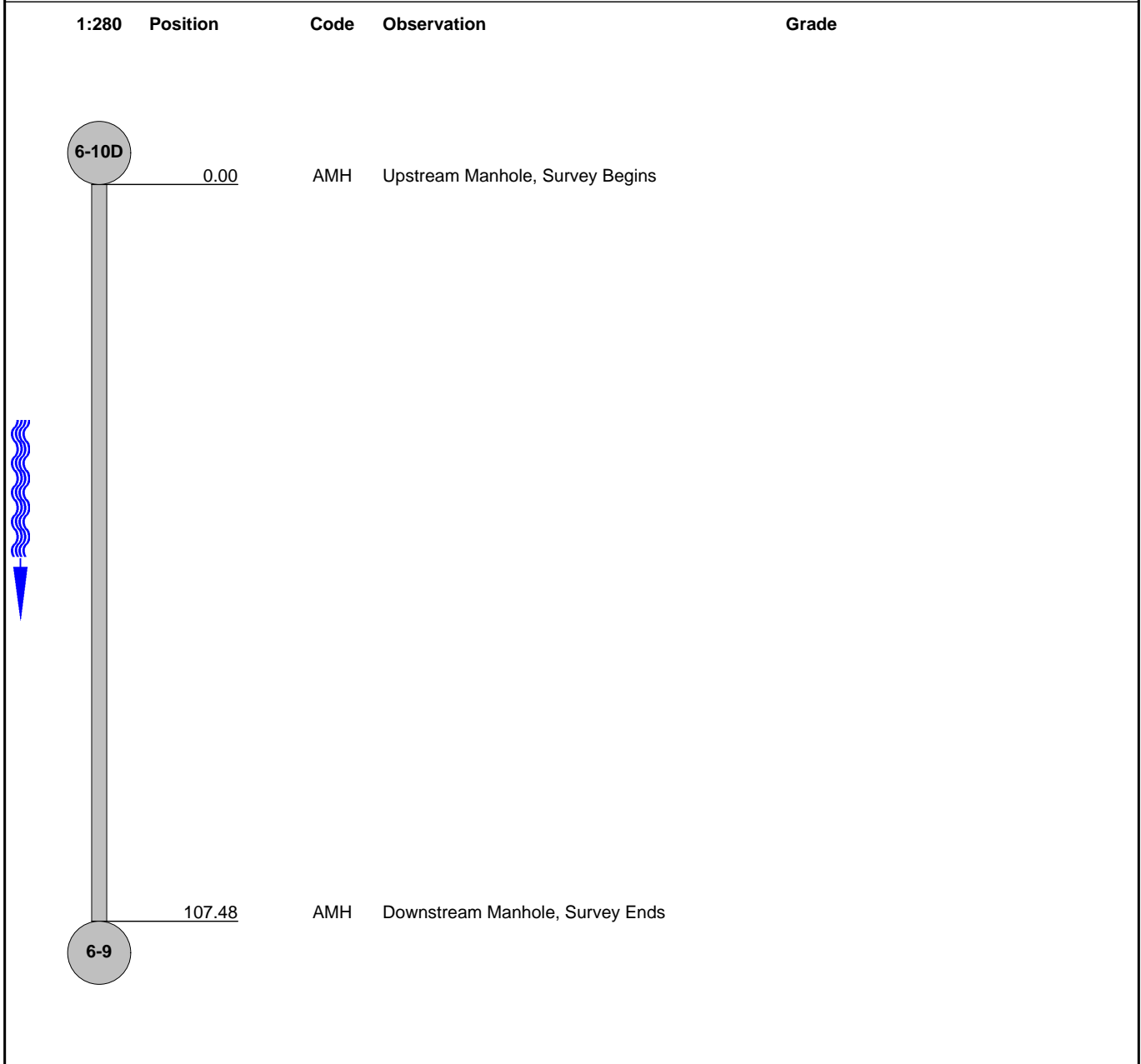
Inspection Report

Date 12/20/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 56
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning Jetting	Sewer Category

Street MILLVILLE AVE	Use of Sewer Sanitary	Upstream MH 6-10D
City NAUGATUCK	Drainage Area	Downstream MH 6-9
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 107.48 ft	Section Length 107.48 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Polyvinyl Chloride
Tape / Media No. 57-122016-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



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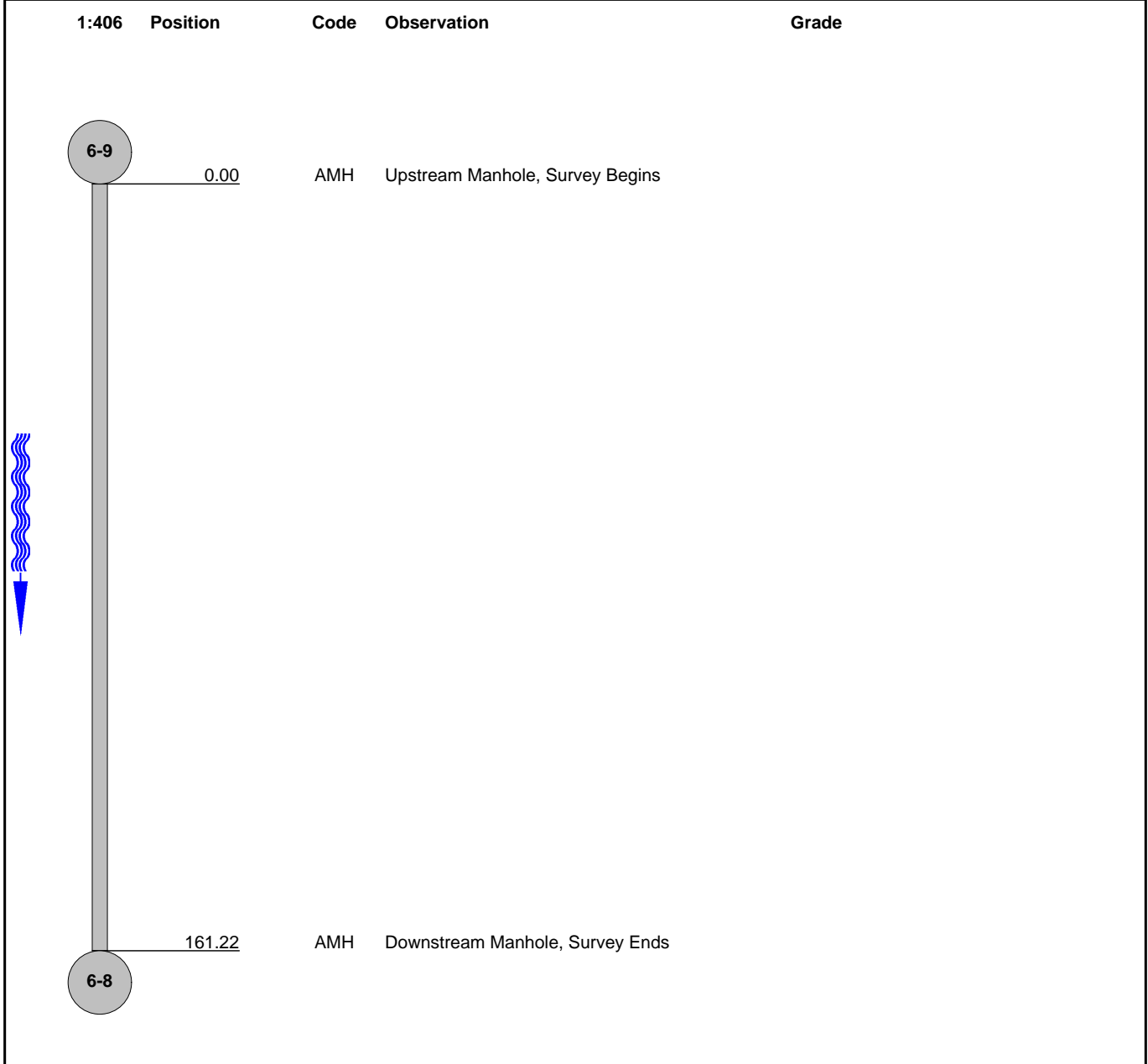
Inspection Report

Date 12/20/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 57
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning Jetting	Sewer Category

Street MILLVILLE AVE	Use of Sewer Sanitary	Upstream MH 6-9
City NAUGATUCK	Drainage Area	Downstream MH 6-8
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 161.22 ft	Section Length 161.22 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Polyvinyl Chloride
Tape / Media No. 57-122016-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



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Inspection Report

Date 12/21/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 58
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street SPRING ST	Use of Sewer Sanitary	Upstream MH 1104
City NAUGATUCK CT	Drainage Area	Dowstream MH 2-14
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 263.30 ft	Section Length 263.30 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Vitrified Clay Pipe
Tape / Media No. 57-122116-1	Lining Method

Add. Information :

1:658	Position	Code	Observation	Grade
	0.00	AMH	Upstream Manhole, Survey Begins	
	12.21	TFC	Tap Factory Made Capped, at 03 o'clock, 4", within 8 inches of joint: YES	
	60.15	TFC	Tap Factory Made Capped, at 03 o'clock, 4", within 8 inches of joint: YES	
	72.16	TFC	Tap Factory Made Capped, at 03 o'clock, 4", within 8 inches of joint: YES	
	122.89	TF	Tap Factory Made, at 03 o'clock, 4", within 8 inches of joint: YES	
	137.91	TFC	Tap Factory Made Capped, at 03 o'clock, 4", within 8 inches of joint: YES	
	258.10	MWLS	Water Level, Sag in pipe, 40 %of cross sectional area	S 3
	263.30	AMH	Downstream Manhole, Survey Ends	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
3100	0000	3	0	3	3	0	3



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Inspection Report

Date 12/21/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 59
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street LANTERN PARK DR	Use of Sewer Sanitary	Upstream MH 2-51
City NAUGATUCK CT	Drainage Area	Dowstream MH 2-50
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 91.97 ft	Section Length 91.97 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Asbestos Cement
Tape / Media No. 57-122116-1	Lining Method

Add. Information :

1:238	Position	Code	Observation	Grade
	0.00	AMH	Upstream Manhole, Survey Begins	
	45.74	TF	Tap Factory Made, at 09 o'clock, 4", within 8 inches of joint: YES	
	56.64	S1 DAGS	Deposits Attached Grease, 5 %of cross sectional area, from 09 to 03 o'clock, , within 8 inches of joint: YES, Start	M 2
	71.15	F1 DAGS	Deposits Attached Grease, 5 %of cross sectional area, from 09 to 03 o'clock, , within 8 inches of joint: YES, Finish	M 2
	91.97	AMH	Downstream Manhole, Survey Ends	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2300	0	6	6	0	2	2



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Inspection Report

Date 12/21/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 60
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street RIDGE RD	Use of Sewer Sanitary	Upstream MH 1097
City NAUGATUCK CT	Drainage Area	Downstream MH 1096
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 266.10 ft	Section Length 266.10 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 6 inch
Year Rehabilitated	Material Asbestos Cement
Tape / Media No. 57-122116-1	Lining Method

Add. Information :

1:672	Position	Code	Observation	Grade
	0.00	AMH	Upstream Manhole, Survey Begins	
	5.10	CS	Crack Spiral, from 12 to 12 o'clock, within 8 inches of joint: NO	S 2
	80.86	TF	Tap Factory Made, at 02 o'clock, 3", within 8 inches of joint: YES	
	84.16	TF	Tap Factory Made, at 01 o'clock, 3", within 8 inches of joint: YES	
	117.49	TF	Tap Factory Made, at 01 o'clock, 3", within 8 inches of joint: YES	
	123.79	TF	Tap Factory Made, at 10 o'clock, 3", within 8 inches of joint: YES	
	147.11	TF	Tap Factory Made, at 02 o'clock, 3", within 8 inches of joint: YES	
	150.42	TF	Tap Factory Made, at 02 o'clock, 3", within 8 inches of joint: YES	
	190.05	TF	Tap Factory Made, at 02 o'clock, 3", within 8 inches of joint: YES	
	193.25	TF	Tap Factory Made, at 01 o'clock, 3", within 8 inches of joint: YES	
	196.85	TF	Tap Factory Made, at 09 o'clock, 3", within 8 inches of joint: YES	
	230.08	TF	Tap Factory Made, at 02 o'clock, 3", within 8 inches of joint: YES	
	262.80	B	Broken, at 10 o'clock, within 8 inches of joint: YES	S 3
	266.10	AMH	Downstream Manhole, Survey Ends	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
3121	0000	5	0	5	2.5	0	2.5



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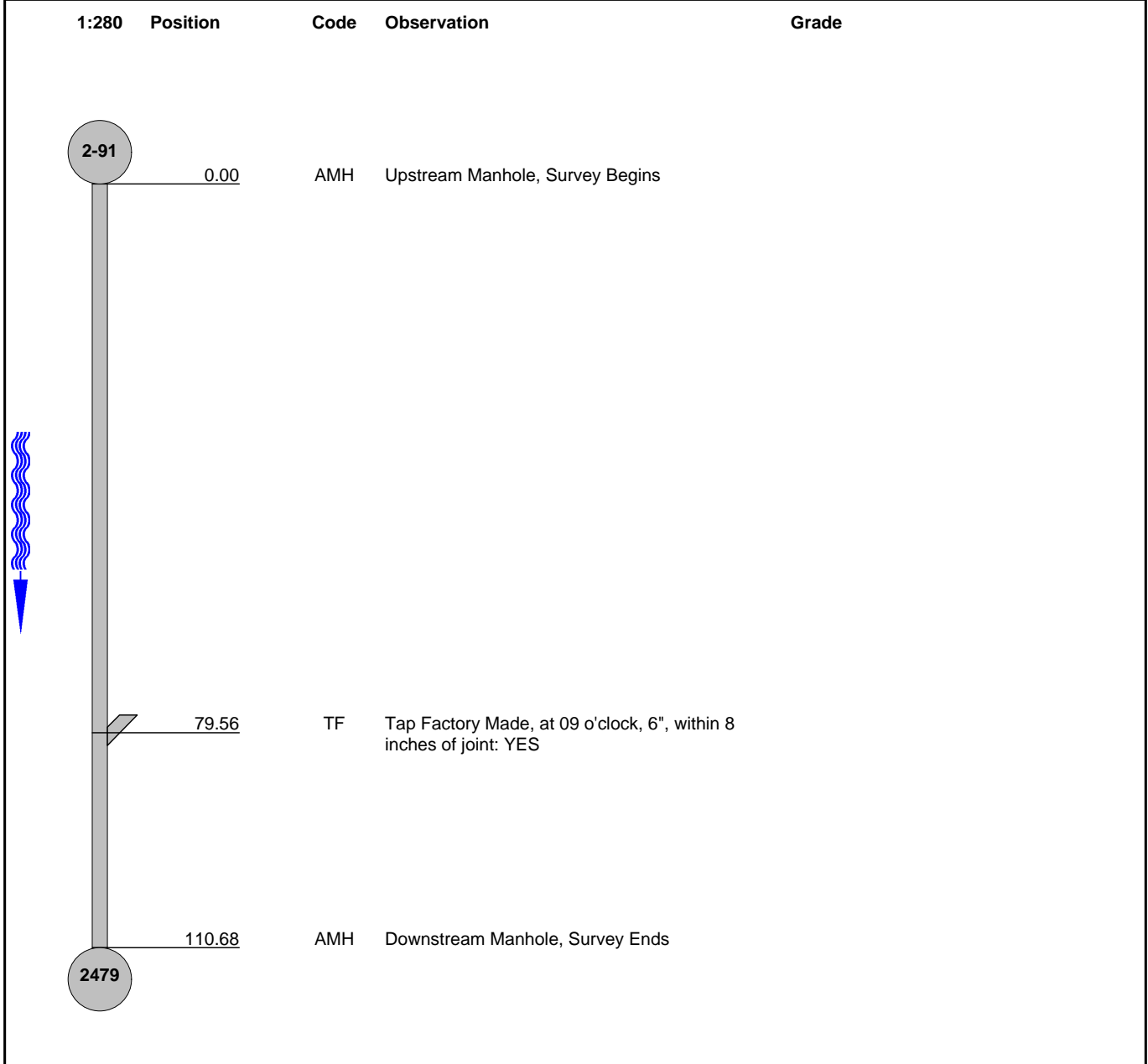
Inspection Report

Date 12/21/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 61
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street WEDGEWOOD RD	Use of Sewer Sanitary	Upstream MH 2-91
City NAUGATUCK CT	Drainage Area	Downstream MH 2479
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 110.68 ft	Section Length 110.68 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Reinforced Plastic Pipe (Truss Pipe)
Tape / Media No. 57-122116-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



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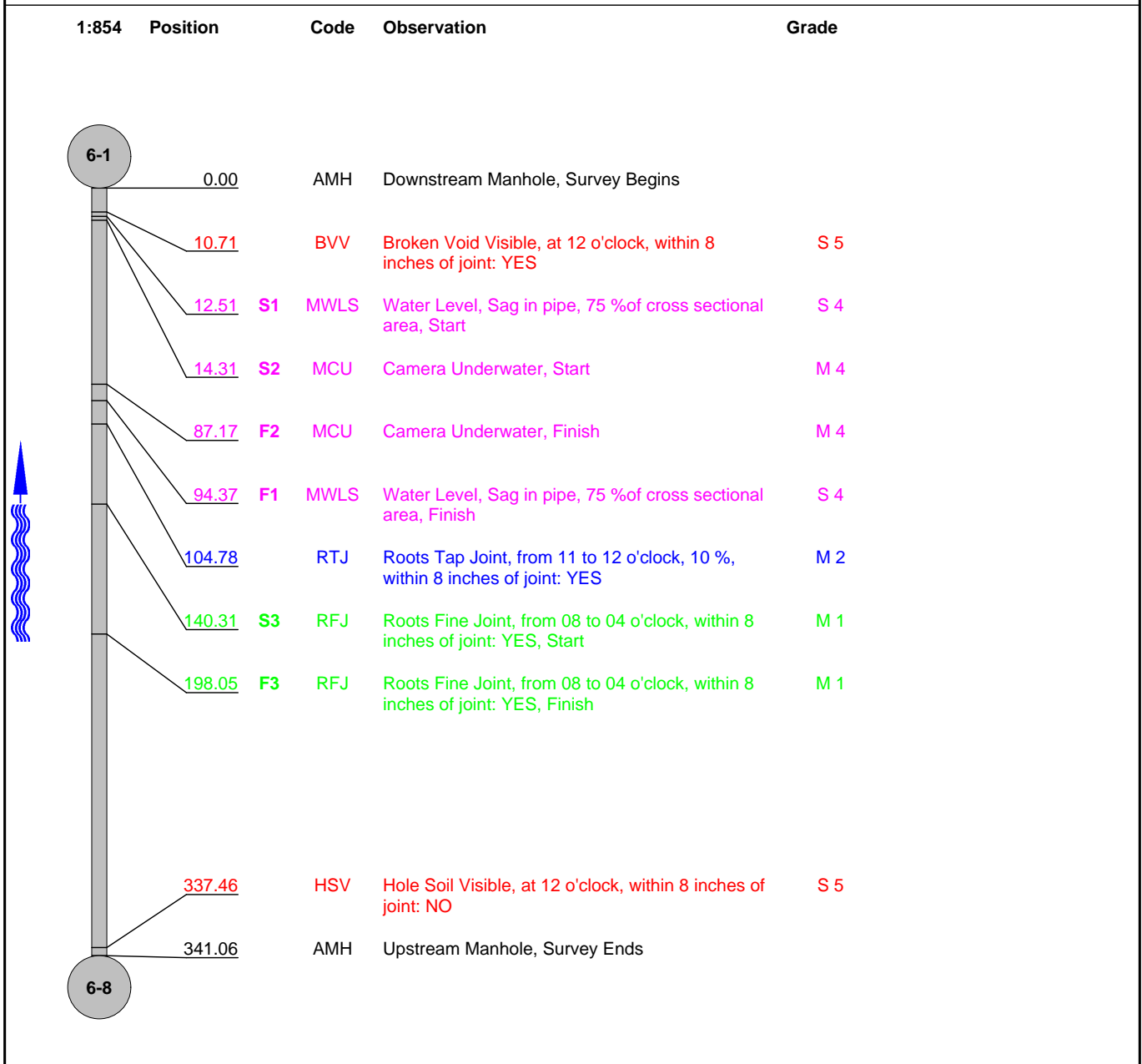
Inspection Report

Date 12/21/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 62
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street RUBBER AVE	Use of Sewer Sanitary	Upstream MH 6-8
City NAUGATUCK CT	Drainage Area	Dowstream MH 6-1
Loc. details	Flow Control Not Controlled	Dir. of Survey Upstream
Location Code	Length surveyed 341.06 ft	Section Length 341.06 ft

Purpose of Survey Routine Assessment	Joint Length	8 inch Vitrified Clay Pipe
Year Laid	Dia./Height	
Year Rehabilitated	Material	
Tape / Media No. 57-122116-1	Lining Method	

Add. Information :

1:854	Position	Code	Observation	Grade
	0.00	AMH	Downstream Manhole, Survey Begins	
	10.71	BVV	Broken Void Visible, at 12 o'clock, within 8 inches of joint: YES	S 5
	12.51	S1 MWLS	Water Level, Sag in pipe, 75 %of cross sectional area, Start	S 4
	14.31	S2 MCU	Camera Underwater, Start	M 4
	87.17	F2 MCU	Camera Underwater, Finish	M 4
	94.37	F1 MWLS	Water Level, Sag in pipe, 75 %of cross sectional area, Finish	S 4
	104.78	RTJ	Roots Tap Joint, from 11 to 12 o'clock, 10 %, within 8 inches of joint: YES	M 2
	140.31	S3 RFJ	Roots Fine Joint, from 08 to 04 o'clock, within 8 inches of joint: YES, Start	M 1
	198.05	F3 RFJ	Roots Fine Joint, from 08 to 04 o'clock, within 8 inches of joint: YES, Finish	M 1
	337.46	HSV	Hole Soil Visible, at 12 o'clock, within 8 inches of joint: NO	S 5
	341.06	AMH	Upstream Manhole, Survey Ends	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
524B	4B21	74	74	148	4.11	2.64	3.22



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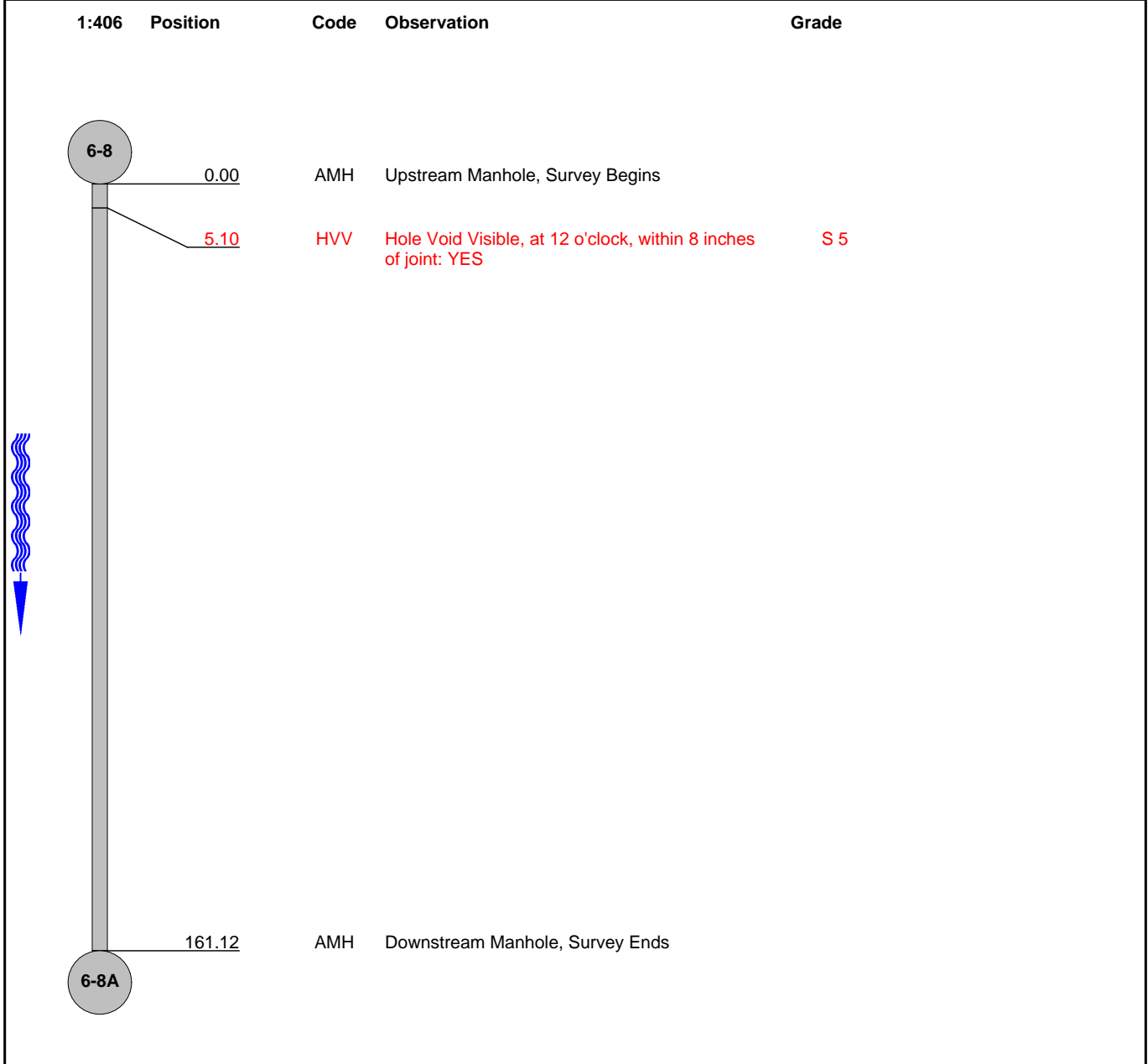
Inspection Report

Date 12/21/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 63
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street RUBBER AVE	Use of Sewer Sanitary	Upstream MH 6-8
City NAUGATUCK CT	Drainage Area	Dowstream MH 6-8A
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 161.12 ft	Section Length 161.12 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Vitrified Clay Pipe
Tape / Media No. 57-122116-1	Lining Method

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	0000	5	0	5	5	0	5



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Inspection Report

Date 12/21/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 64
Certificate No. U-214-06020362	Survey Customer	System Owner	Preset :	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street RUBBER AVE	Use of Sewer Sanitary	Upstream MH 6-8A
City NAUGATUCK CT	Drainage Area	Dowstream MH 6-1
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code	Length surveyed 181.14 ft	Section Length 181.14 ft

Purpose of Survey Routine Assessment	Joint Length	8 inch Vitrified Clay Pipe
Year Laid	Dia./Height	
Year Rehabilitated	Material	
Tape / Media No. 57-122116-1	Lining Method	

Add. Information :

1:462	Position	Code	Observation	Grade
	0.00	AMH	Upstream Manhole, Survey Begins	
	2.10	RFJ	Roots Fine Joint, from 07 to 11 o'clock, within 8 inches of joint: YES	M 1
	7.01	S1 RFJ	Roots Fine Joint, from 08 to 04 o'clock, within 8 inches of joint: YES, Start	M 1
	46.34	F1 RFJ	Roots Fine Joint, from 08 to 04 o'clock, within 8 inches of joint: YES, Finish	M 1
	75.26	RFJ	Roots Fine Joint, from 01 to 03 o'clock, within 8 inches of joint: YES	M 1
	112.29	CL	Crack Longitudinal, at 12 o'clock, within 8 inches of joint: YES	S 2
	112.29	MWLS	Water Level, Sag in pipe, 40 %of cross sectional area	S 3
	117.69	S2 MCU	Camera Underwater, Start	M 4
	144.11	F2 MCU	Camera Underwater, Finish	M 4
	170.43	HVV	Hole Void Visible, at 01 o'clock, within 8 inches of joint: YES	S 5
	181.14	AMH	Downstream Manhole, Survey Ends	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5131	451A	10	30	40	3.33	2	2.22

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Inspection Report

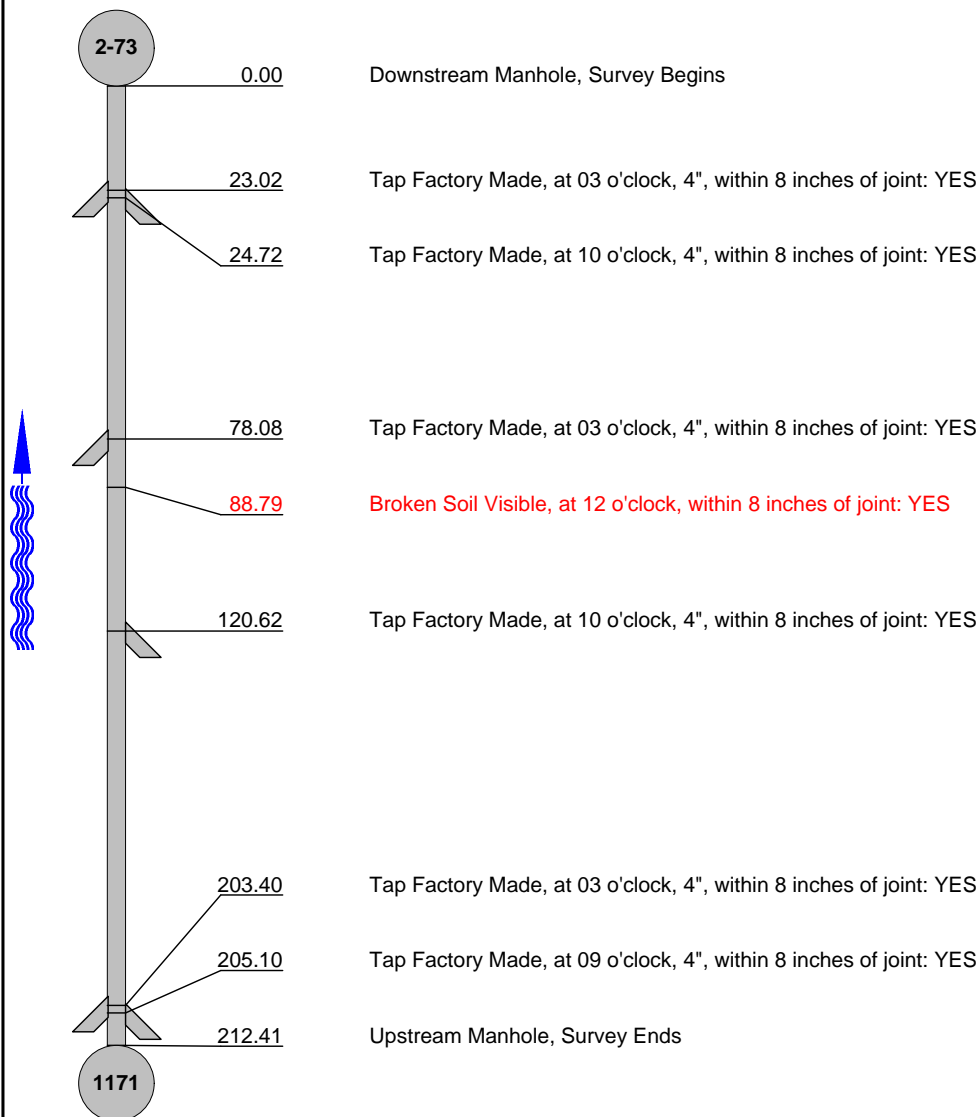
Date 8/17/2016	P/O. No.	Weather Dry	Surveyor's Name TIM BLACKWELL	Pipe Segment Reference	Section No. 15
Certificate No. U-214-06020362	Survey Customer	System Owner	Date Cleaned	Pre-Cleaning Jetting	Sewer Category

Street STONYBROOK RD	Use of Sewer Sanitary	Upstream MH 1171
City NAUGATUCK CT	Drainage Area	Dowstream MH 2-73
Loc. details	Flow Control Not Controlled	Dir. of Survey Upstream
Location Code	Length surveyed 212.41 ft	Section Length 212.41 ft

Purpose of Survey Routine Assessment	Joint Length
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Polyvinyl Chloride
Tape / Media No. 104-081716-1	Lining Method

Add. Information :

1:510 Position Observation



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	0000	5	0	5	5	0	5

APPENDIX B - MH INSPECTIONS

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APPENDIX J
MANHOLE INSPECTION RESULTS

Manhole Inspection Data

Subarea	Manhole Number	Location	Nearest House Number	Manhole Location	Cover Diam (in)	Height Above Grade (FT)	Watertight	Cover Vent	Cover Holes	Cover Condition	Potential Runoff	Evidence Surcharge	HT Surcharge (FT)	Depth Rim to Inv (FT)	Frame Condition	Chimney Diameter (in)	Chimney Condition	Steps Condition	Step Count	Wall Material	Wall Condition	I and I	Bench Condition	Bench Material	Defect 1 MACP Code	Defect 1 Depth From Rim (FT)	Defect 1 Clock Start	Defect 1 Clock Stop	Defect 2 MACP Code	Defect 2 Depth From Rim (FT)	Defect 2 Clock Start	Defect 2 Clock Stop	Defect 3 MACP Code	Rec Rehab 1			
246	1104	SPRING ST	419	In Road	24	0.0	No	No	0	Good	No	No	0.0	6.3	Sound	24	Sound	Corroded Reinforcement	4	Brick	Sound	None	Sound	Brick													
246	1105	GUS ST	32	In Road	24	0.0	No	No	0	Good	No	No	0.0	5.7	Sound	25	Sound	Sound	2	Precast	Sound	None	Sound	Brick												Replace Frame	
246	1105A	GUS ST	20	In Road	23	0.0	No	No	0	Good	No	No	0.0	8.0	Sound	26	Sound	Sound	6	Concrete Block	Sound	None	Sound	Brick													
246	1129	SPRING ST	0	Driveway	24	0.0	No	No	0	Good	No	No	0.0	4.0	Sound	24	Sound	No Steps	0	Precast	Sound	None	Sound	Brick													
246	1132	SPRING ST	553	In Road	24	0.0	Yes	Yes	18	Good	No	No	0.0	3.6	Sound	24	Sound	Sound	1	Brick	Sound	None	Sound	Brick													
246	1132.1	SPRING ST	0	In Road	24	0.0	No	Yes	16	Good	No	No	0.0	7.2	Sound	25	Sound	Sound	4	Brick	Sound	None	Sound	Brick													
246	2-1	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		6.9	Sound	24	Sound	Sound	3	Precast	Sound	None	Sound	Brick													
246	2-10	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	Yes	No		7.1	Sound	24	Sound	Sound	3	Precast	Sound	None	Sound	Brick	RFJ	2.0	12	12								Seal Chimney: Replace F/C-W	
246	2-11	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		9.0	Sound	24	Sound	Sound	6	Precast	Sound	None	Sound	Brick													
246	2-12	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		6.8	Sound	25	Sound	Sound	3	Precast	Sound	None	Sound	Brick													
246	2-14	SPRING ST	0	In Road	24	0.0	No	Yes	2	Good	No	No	0.0	5.9	Sound	25	Sound	Sound	3	Brick	Sound	None	Sound	Brick													
246	2-15	SPRING ST	0	Driveway	24	0.0	No	No	0	Good	No	No	0.0	5.1	Broken	24	Sound	Sound	6	Precast	Sound	Stains	Sound	Brick													Replace Frame
246	2-16	SPRING ST	0	Driveway	24	0.0	Yes	No	0	Good	No	No	0.0	11.2	Sound	25	Sound	Sound	8	Precast	Sound	None	Sound	Brick													
246	2-16A	SPRING ST	0	Driveway	24	0.0	No	No	0	Good	No	No	0.0	8.5	Sound	24	Sound	Sound	5	Precast	Sound	None	Sound	Brick													
246	2-16B	SPRING ST	0	Driveway	24	0.0	No	No	0	Good	No	No	0.0	8.3	Sound	24	Sound	Sound	5	Precast	Sound	None	Sound	Brick													
246	2-16C	SPRING ST	0	Parking Lot	24	0.0	No	No	0	Good	No	No	0.0	8.7	Sound	24	sing/Loose Br	Sound	0	Precast	Sound	None	Sound	Brick												Seal Chimney	
246	2-17	GUS ST	0	In Road	24	0.0	No	No	0	Good	No																										
246	2-2	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		6.2	Sound	24	Sound	Sound	4	Precast	Sound	None	Sound	Brick													
246	2-22	SPRING ST	409	In Road	24	0.0	Yes	Yes	12	Good	No	No	0.0	6.9	Sound	25	Sound	Sound	4	Brick	Sound	None	Sound	Brick													
246	2-23	SPRING ST	403	In Road	23	0.0	Yes	Yes	2	Good	No	No	0.0	6.9	Sound	24	Sound	Sound	4	Brick	Sound	None	Sound	Brick													
246	2-3	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		6.0	Sound	0	Sound	Sound	3	Precast	Sound	None	Sound	Brick													
246	2-4	PORTER AVE	55	In Road	23	0.0	No	No	0	Good	No	No	0.0	13.1	Sound	24	Sound	Sound	5	Brick	Sound	None	Sound	Brick													
246	2-5	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		7.4	Sound	23	Sound	Sound	4	Brick	Sound	None	Sound	Brick													
246	2-6	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	Yes	No		7.8	Sound	23	Sound	Sound	4	Precast	Sound	Visible Drips	Sound	Brick	IW	7.0	12	12									Reline MH
246	2-7	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	Yes	No		7.8	Sound	24	Sound	Sound	5	Precast	Sound	None	Sound	Brick	RMB	7.2	6	12									Reline MH
246	2-8	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		6.3	Sound	24	Sound	Sound	3	Precast	Sound	None	Sound	Brick													
246	6-193	PORTER AVE	0	Wooded/Easement	24	0.0	No	No	0	Good	No	No		8.0	Sound	25	Sound	Sound	4	Precast	Sound	None	Sound	Brick													
246	6-194	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		8.6	Sound	24	Sound	Sound	4	Precast	Sound	None	Sound	Brick													
246	6-195	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		7.1	Sound	24	Sound	Sound	4	Precast	Sound	None	Sound	Brick													
246	6-197	PORTER AVE	0	Wooded/Easement	23	0.0	No	No	0	Good	No	No		7.1	Sound	0	Sound	Sound	5	Precast	Sound	None	Sound	Brick													
246	7-12	BRIDGE ST (ROUTE 68)	40	In Road	24	0.0	No	No	0	Good	No	No	0.0	13.3	Sound	24	Sound		0	Precast	Sound	None	Sound	Coated													
246	7-13	BRIDGE ST (ROUTE 68)	34	In Road	23	0.0	No	No	0	Good	No	No	0.0	9.1	Sound	24	Sound	Sound	6	Precast	Sound	None	Sound														
246	7-38	CROWN ST	35	In Road	24	0.0	No	No	0	Good	No	No	0.0	7.9	Sound	25	Sound	Sound	6	Precast	Sound	None	Sound	Poured in Place													
10_198	10-198	RUBBER AVE	0	Parking Lot	24	0.0	No	No	0	Good	Yes	No	0.0	19.1	Sound	24	Sound	Sound	18	Brick	Sound	None	No Bench														Replace F/C-G
10_198	10-202	WATER ST	100	In Road	23	0.0	No	No	0	Good	No	No	0.0	17.0	Sound	23	Sound	Sound	15	Precast	Sound	None	Sound	Brick													
10_198	10-202A	WATER ST	100	In Road	24	0.0	No	No	0	Good	No	No	0.0	17.2	Sound	24	Sound	Sound	15	Precast	Sound	None	Sound	Brick													
10_198	10-204	WATER ST	0	In Road	23	0.0	No	No	0	Good	No	Yes	2.3	17.2	Sound	24	Sound	Sound	14	Precast	Sound	None	Sound	Brick													
10_198	10-207	RUBBER AVE	0	Parking Lot	24	0.0	No	No	0	Good	No	Yes	6.6	14.6	Sound	24	Sound	Sound	10	Precast	Sound	None	Sound	Brick													
10_198	7-1	WATER ST	0	In Road	23	0.0	No	No	0	Good	No	No	0.0	17.0	Sound	24	Sound	Sound	20	Precast	Sound	None	Sound	Brick													
10_198	7-1A	WATER ST	202	In Road	23	0.0	No	No	0	Good	No	No	0.0	15.7	Sound	24	Sound	Sound	13	Precast	Sound	None	Sound	Brick													
10_198	7-2	WATER ST	0	In Road	24	0.0	No	No	0	Good	No	No	0.0	16.8	Sound	24	Sound	Sound	14	Precast	Sound	None	Sound	Brick													
10_198	7-4	WATER ST	0	In Road	24	0.0	No	No	0	Good	No	No	0.0	19.6	Sound	24	Sound	Sound	19	Precast	Sound	None	Sound	Brick													

Manhole Inspection Data

Subarea	Manhole Number	Location	Nearest House Number	Manhole Location	Cover Diam (in)	Height Above Grade (FT)	Watertight	Cover Vent	Cover Holes	Cover Condition	Potential Runoff	Evidence Surcharge	HT Surcharge (FT)	Depth Rim to Inv (FT)	Frame Condition	Chimney Diameter (in)	Chimney Condition	Steps Condition	Step Count	Wall Material	Wall Condition	I and I	Bench Condition	Bench Material	Defect 1 MACP Code	Defect 1 Depth From Rim (FT)	Defect 1 Clock Start	Defect 1 Clock Stop	Defect 2 MACP Code	Defect 2 Depth From Rim (FT)	Defect 2 Clock Start	Defect 2 Clock Stop	Defect 3 MACP Code	Rec Rehab 1			
10_198	9-1	RUBBER AVE	0	In Road	24	0.0	No	No	0	Good	No	Yes	3.6	15.2	Sound	24	Sound	Sound	10	Precast	Sound	None	sing/Loose Br	Brick	MB	13.0	9	10						Rebuild Bench/Invert			
10_198	9-2	RUBBER AVE	0	In Road	24	0.0	No	No	0	Good	No	No	0.0	10.4	Sound	24	Sound	Sound	7	Precast	Sound	None	Sound	Brick													
10_198	9-2A	RUBBER AVE	0	In Road	24	0.0	No	No	0	Good	No	No	0.0	8.1	Sound	24	Sound	No Steps	0	Brick	Sound	None	Sound	Brick													
6_1	2480	WEST HILL TER	59	In Road	24	0	No	No	0	Good	No	No	0		Sound	24	Sound																				
6_1	6-11	MILLVILLE AVE	597	In Road	24	0	No	Yes	19	Good	No	No	0	6.4	Sound	24	Missing/ Loose Bricks	Corroded Reinforcement	2	Brick	Sound	None	Sound	Brick	DAGS	6.4	6	6	MMM	2	5	12			Reline MH		
6_1	6-12	MILLVILLE AVE	547	In Road	23	0	No	Yes	1	Good	No	No	0	6.5	Sound	25	Sound	Sound	3	Precast	Sound	Stains	Sound	Brick	IS	1.5	6	1							Seal Chimney		
6_1	6-13	MILLVILLE AVE	617	In Road	0	0	No	No	0	Good	No	No	0	7.5	Sound	25	Sound	Sound	0	Precast	Sound	None	Sound	Brick	DSF	7	12	12							Clean MH		
6_1	6-14	MILLVILLE AVE	647	In Road	24	0	No	No	0	Good	No	No	0	6.1	Sound	24	Sound	Sound	3	Precast	Sound	None	Sound	Brick													
6_1	6-15	MILLVILLE AVE	657	In Road	24	0	No	No	0	Good	No	No	0	8.3	Sound	24	Sound	Sound	5	Precast	Sound	Stains	Sound	Brick	IS	1.3	6	9								Seal Chimney	
6_1	6-16	MILLVILLE AVE	675	In Road	24	0	No	No	0	Good	No	No	0	6.9	Sound	24	Missing/ Loose Bricks	Sound	3	Precast	Sound	None	Sound	Brick	MMS	1	12	12								Seal Chimney	
6_1	6-17	WEST HILL TER	27	In Road	24	0	No	No	0	Good	No	No	0	5.7	Sound	24	Sound	Sound	3	Precast	Sound	Stains	Sound	Brick	CC	1.7	12	12	CL	1.7	10	10				Seal Chimney	
6_1	6-19	WESTVIEW DR	19	In Road	23	0	No	No	0	Good	No	No	0	7.2	Sound	24	Sound	Sound	5	Precast	Sound	Stains	Sound	Brick	IS	0.2	12	12								Seal Chimney	
6_1	6-20	WESTVIEW DR	10	In Road	23	0	No	No	0	Good	No	No	0	8.0	Sound	24	Sound	Sound	6	Precast	Sound	None	Sound	Brick													Seal Chimney
6_1	6-21	WESTVIEW DR	5	In Road	24	0	No	No	0	Good	No	No	0	12.9	Sound	24	Sound	Sound	11	Precast	Sound	Stains	Cracked		IS	0.9	12	12									Seal Chimney
6_1	6-23	WEST HILL TER	18	In Road	23	0	No	Yes	1	Good	No	No	0	4.6	Sound	24	Sound	Sound	2	Precast	Sound	None	Sound	Precast													
6_215	1094	RIDGE RD	93	In Road	24	0.0	No	No	0	Good	No	Yes	3.7	8.8	Sound	24	Sound	Sound	7	Precast	Sound	None	Sound	Coated													
6_215	1097	RIDGE RD	31	Grass	24	0.0	No	No	0	Good	No	No	0.0	13.4	Sound	24	Sound	Sound	10	Precast	Sound	None	Sound	Brick													
6_215	1099	ROUND TREE DR	30	Grass	25	0.0	No	No	0	Good	No	No	5.8	1.0	Sound	25	Sound	Sound	4	Precast	Sound	None	Sound	Poured in Place													
6_215	1102	COACH CIR	27	Parking Lot	24	0.0	No	No	0	Good	Yes	No	0.0	11.3	Sound	24	Sound	Sound	10	Precast	Sound	None	Sound	Brick													Replace F/C-G
6_215	1166	HERITAGE DR	57	In Road	24	0.0	No	No	0	Good	No	No	0.0	5.8	Sound	25	Sound	Sound	3	Precast	Sound	None	Sound	Brick													
6_215	1167	TIMOTHY RD	344	In Road	23	0.0	No	No	0	Good	No	Yes	1.0	8.7	Sound	25	Missing/ Loose Bricks	Sound	4	Precast	Sound	None	Sound	Brick	MML	2.0	12	12									Rebuild Chimney
6_215	1169	INGA CIR	9	In Road	23	0.0	No	No	0	Good	No	No	0.0	5.9	Broken	24	Sound	Sound	3	Precast	Sound	None	Sound	Brick		0.0	12	12									
6_215	1172	BRIDLE TRAIL DR	30	In Road	23	0.0	No	No	0	Good	No	No	0.0	9.8	Sound	24	Sound	Corroded Reinforcement	8	Precast	Sound	None	Sound	Brick													
6_215	1178	BRIDLE TRAIL DR	48	In Road	23	0.0	No	No	0	Good	No	Yes	0.5	9.2	Sound	24	Sound	Sound	7	Precast	Sound	Stains	Sound	Brick	IS	3.2	12	12									
6_215	1179	BRIDLE TRAIL DR	41	In Road	23	0.0	No	No	0	Good	No	No	0.0	9.5	Sound	24	Sound	Sound	7	Precast	Sound	Stains	Sound	Brick	IS	4.3	12	12									
6_215	2335	FIELD ST	261	In Road	24	0	No	No	0	Good	No	No	0	9.3	Sound	25	Sound	Sound	6	Precast	Sound	None	Sound	Brick													
6_215	2337	FIELD ST	287	In Road	24	0	No	No	0	Good	No	No	0	7.4	Sound	24	Sound	Sound	4	Precast	Sound	None	Sound	Brick													
6_215	2339	FIELD ST	306	In Road	24	0	No	No	0	Good	No	No	0	7.3	Sound	25	Sound	Sound	4	Precast	Sound	None	Sound	Brick													
6_215	2-34	FIELD ST	37	Parking Lot	24	0.0	No	No	0	Good	No	No	0.0	5.5	Sound	24	Sound	Corroded Reinforcement	2	Brick	Sound	None	Sound	Brick													
6_215	2340	KING ST	31	In Road	23	0.0	No	No	0	Good	No	No	0.0	7.8	Sound	24	Sound	Sound	5	Precast	Sound	Stains	Sound	Brick	IS	3.6	6	1									
6_215	2341	FAIRFIELD CT	1	In Road	24	0	No	No	0	Good	No	No	0	10.2	Sound	24	Sound	Sound	7	Precast	Sound	None	Sound	Brick													
6_215	2342	FAIRFIELD CT	29	Parking Lot	24	0	No	No	0	Good	No	No	0	13.0	Sound	25	Sound	Sound	10	Precast	Sound	Stains	Sound	Brick	IS	11	12	12									
6_215	2-35	FIELD ST	47	In Road	24	0.0	No	No	0	Good	No	Yes	5.9	6.3	Sound	25	Sound	Sound	3	Precast	Sound	None	No Bench	Other													
6_215	2-36	KING ST	79	In Road	2	0.0	No	No	0	Good	No	Yes	3.5	3.9	Broken	24	Missing/ Loose Bricks	No Steps	0	Other	Other	None	Sound	Brick													Seal Chimney
6_215	2365	HILLSIDE AVE	580	In Road	24	0.0	No	No	0	Good	No	No	0.0	5.2	Sound	25	Sound	Sound	1	Precast	Sound	None	Sound	Brick													
6_215	2-37	FIELD ST	100	In Road	24	0.0	No	No	0	Good	No	No	0.0	6.3	Sound	25	Sound	Sound	2	Brick	Sound	None	Sound	Brick													
6_215	2-40	MILL ST	0	Sidewalk	24	0.0	No	No	0	Good	No	No	0.0	13.5	Sound	24	None	Sound	12	Precast	Sound	Visible Drips	Sound	Brick	DAE	8.6	3	3	RFJ	3.2	12	12					Reline MH
6_215	2-41	MILL ST	0	Sidewalk	24	0.0	No	No	0	Good	No	No	0.0	11.6	Sound	24	Broken	Sound	9	Precast	Sound	a Continuous	Sound	Brick	DAE	10.6	4	5									Reline MH
6_215	2-42	MILL ST	0	Sidewalk	24	0.0	No	No	0	Good	No	No	0.0	9.6	Sound	25	Sound	Sound	7	Precast	Sound	None	Sound	Brick	DAE	9.0	9	9	DAE	9.0	10	10	DAE				Reline MH
6_215	2429	BRIDLE TRAIL DR	18	In Road	24	0.0	No	No	0	Good	No	No	0.0	11.9	Sound	24	Sound	Sound	10	Precast	Sound	None	Sound	Brick													
6_215	2429a	BRIDLE TRAIL DR	5	In Road	24	0.0	No	No	0	Good	No	No	0.0	9.7	Sound	25	Sound	Sound	8	Precast	Sound	None	Sound	Brick													
6_215	2-43	MILL ST	0	In Road	24	0.0	No	No	0	Good	No	No	0.0	8.5	Sound	25	Sound	Sound	5	Precast	Sound	None	Sound	Brick													

Manhole Inspection Data

Subarea	Manhole Number	Location	Nearest House Number	Manhole Location	Cover Diam (in)	Height Above Grade (FT)	Watertight	Cover Vent	Cover Holes	Cover Condition	Potential Runoff	Evidence Surcharge	HT Surcharge (FT)	Depth Rim to Inv (FT)	Frame Condition	Chimney Diameter (in)	Chimney Condition	Steps Condition	Step Count	Wall Material	Wall Condition	I and I	Bench Condition	Bench Material	Defect 1 MACP Code	Defect 1 Depth From Rim (FT)	Defect 1 Clock Start	Defect 1 Clock Stop	Defect 2 MACP Code	Defect 2 Depth From Rim (FT)	Defect 2 Clock Start	Defect 2 Clock Stop	Defect 3 MACP Code	Rec Rehab 1				
6_215	2-45	MILL ST	105	In Road	24	0.0	No	No	0	Good	No	No	0.0	7.7	Sound	24	Sound	Sound	6	Precast	Sound	None	Sound	Brick														
6_215	2-46	MILL ST	105	In Road	23	0.0	No	No	0	Good	No	No	0.0	6.9	Sound	24	Sound	Sound	5	Precast	Sound	None	Sound	Brick														
6_215	2-47	MILL ST	65	In Road	23	0.0	No	No	0	Good	No	No	0.0	7.6	Sound	24	Sound	Sound	5	Precast	Sound	None	Sound	Brick														
6_215	2479	WEDGEWOOD DR	320	In Road	24	0.0	No	No	0	Good	No	No	0.0	7.3	Sound	24	Missing/ Loose Bricks	Sound	3	Precast	Sound	None	Sound	Brick	MB	2.5	5	6							Seal Chimney			
6_215	2-48	LANTERN PARK DR	23	In Road	24	0.0	No	No	0	Good	No	No	0.0	11.4	Sound	24	Sound	Sound	8	Precast	Sound	None	Sound	Poured in Place	DAGS	11.4	6	6										
6_215	2-49	LANTERN PARK DR	37	In Road	24	0.0	No	No	0	Good	No	No	0.0	15.0	Sound	25	Sound	Sound	12	Precast	Reinforcement	None	Sound	Brick	SAV	9.0	12	12								Reline MH		
6_215	2-50	LANTERN PARK DR	55	In Road	24	0.0	No	No	0	Good	No	Yes	12.6	13.1	Sound	24	Sound	Sound	10	Precast	Sound	None	Sound	Brick														
6_215	2-51	LANTERN PARK DR	66	Grass	24	0.0	No	No	0	Good	No	No	0.0	11.8	Sound	25	Sound	Sound	9	Coated	Sound	None	Sound	Brick														
6_215	2-53	LANTERN PARK DR	85	In Road	24	0.0	No	No	0	Good	No	No	0.0	6.4	Sound	24	Sound	Sound	4	Precast	Sound	None	Sound	Brick	DSGV	6.0	8	11										
6_215	2-54	LANTERN PARK DR	88	Parking Lot	24	0.0	No	No	0	Good	No	Yes	7.9	10.7	Sound	25	Sound	Sound	9	Precast	Sound	Continuous Flow	Sound	Coated	IR	10.1	9	9									Reline MH	
6_215	2-55	LANTERN PARK DR	124	Parking Lot	24	0.0	No	No	0	Good	No	No	0.0	9.8	Sound	24	Sound	Sound	8	Precast	Sound	None	Sound	Coated														
6_215	2-56	COACH CIR	138	Driveway	24	0.0	No	No	0	Good	Yes	No	0.0	10.7	Sound	25	Sound	Sound	9	Precast	Sound	None	Sound	Coated													Replace F/C-G	
6_215	2-57	COACH CIR	146	Driveway	24	0.0	No	No	0	Good	No	Yes	11.0	11.6	Sound	24	Sound	Corroded Reinforcement	8	Precast	Sound	None	Sound	Brick														
6_215	2-61	KING ST	0	Wooded/Easement	24	1.0	No	No	0	Good	No	No	0.0	7.6	Sound	24	Sound	Sound	3	Precast	Sound	None	Sound	Brick														
6_215	2-63	FIELD ST	0	In Road	24	0.0	No	Yes	18	Good	No	No	0.0	5.5	Sound	25	Sound	Sound	3	Brick	Sound	None	Sound	Brick														
6_215	2-64	PARTRIDGETOWN RD	18	In Road	23	0.0	No	No	0	Good	No	No	0.0	10.2	Sound	24	Sound	Sound	5	Precast	Sound	None	Sound	Brick														
6_215	2-65	PARTRIDGETOWN RD	48	In Road	23	0.0	No	No	0	Good	No	No	0.0	7.0	Sound	23	Sound	Sound	4	Precast	Sound	None	Sound	Brick														
6_215	2-66	PARTRIDGETOWN RD	91	In Road	23	0.0	No	No	0	Good	No	No	0.0	7.3	Sound	24	Sound	Sound	5	Precast	Sound	None	Sound	Brick														
6_215	2-67	PARTRIDGETOWN RD	101	In Road	23	0.0	No	No	0	Good	No	No	0.0	8.0	Sound	24	Missing/ Loose Bricks	Sound	4	Precast	Sound	None	Sound	Brick	MMM	1.5	12	12										Seal Chimney
6_215	2-68	PARTRIDGETOWN RD	116	In Road	23	0.0	No	No	0	Good	No	No	0.0	8.5	Sound	24	Sound	Sound	5	Precast	Sound	None	Sound	Brick														
6_215	2-69	PARTRIDGETOWN RD	140	In Road	23	0.0	No	No	0	Good	No	No	0.0	8.6	Sound	24	Missing/ Loose Bricks	Sound	4	Precast	Sound	None	Sound	Brick	MMM	1.8	12	12										Seal Chimney
6_215	2-70	TIMOTHY RD	71	In Road	24	0	No	No	0	Good	No	No	0	7.6	Sound	25	Sound	Corroded Reinforcement	5	Precast	Sound	None	Sound	Brick														
6_215	2-71	FLANDERS RD	27	In Road	24	0	No	No	0	Good	No	No	0	6.4	Sound	25	Sound	Sound	3	Precast	Sound	None	No Bench															
6_215	2-72	STONEBROOK RD	57	Wooded/Easement	24	0.0	No	No	0	Good	No	No	0.0	10.5	Sound	0	Sound	Sound	4	Precast	Sound	None	Sound	Brick														
6_215	2-73	STONEBROOK RD	57	In Road	24	0.0	No	No	0	Good	No	No	0.0	12.2	Sound	21	Sound	Sound	0	Concrete Block	Sound	None	Sound	Brick														
6_215	2-75	STONEBROOK RD	120	In Road	24	0.0	No	No	0	Good	No	No	0.0	6.0	Sound	24	Sound	Sound	4	Precast	Sound	None	Sound	Brick														
6_215	2-77	TIMOTHY RD	151	In Road	23	0.0	No	No	0	Good	No	No	0.0	5.8	Sound	25	Sound	Sound	3	Brick	Sound	None	Sound	Coated														
6_215	2-82	WEDGEWOOD DR	334	In Road	23	0.0	No	No	0	Good	No	No	0.0	7.6	Sound	25	Sound	Sound	0	Precast	Sound	None	Sound	Brick														
6_215	2-84	HERITAGE DR	31	In Road	24	0.0	No	No	0	Good	No	No	0.0	5.9	Sound	24	Sound	Sound	3	Precast	Sound	None	Sound	Brick														
6_215	2-85	PILGRIM LN	29	In Road	24	0.0	No	No	0	Good	No	No	0.0	15.0	Sound	24	Sound	Sound	12	Precast	Sound	Continuous Flow	Sound	Brick	IR	14.6	7	7										Reline MH
6_215	2-86	PILGRIM LN	31	In Road	24	0.0	No	No	0	Good	No	No	0.0	12.0	Sound	0	Sound	Sound	9	Precast	Sound	None	No Bench	N/A														
6_215	2-87	TANGLEWOOD LN	83	Grass	24	0.0	No	No	0	Good	No	No	0.0	4.4	Sound	25	Sound	No Steps	0	Precast	Sound	None	Sound	Brick														
6_215	2-88	TANGLEWOOD LN	73	In Road	24	0.0	No	No	0	Good	No	No	0.0	9.0	Sound	24	Sound	Sound	6	Precast	Sound	None	Sound	Brick														
6_215	2-90	TANGLEWOOD LN	20	In Road	24	0.0	No	No	0	Good	No	No	0.0	7.2	Sound	24	Missing/ Loose Bricks	Sound	3	Precast	Sound	None	Sound	Brick	SSC	2.5	12	12										Seal Chimney
6_215	2-91	WEDGEWOOD DR	290	In Road	23	0.0	No	No	0	Good	No	No	0.0	7.0	Sound	25	Sound	Sound	3	Precast	Sound	None	Sound	Brick														
6_215	2-92	WEDGEWOOD DR	279	In Road	24	0.0	No	No	0	Good	No	No	0.0	6.1	Sound	25	Sound	Sound	0	Precast	Sound	None	Sound	Brick														
6_215	2-93	WEDGEWOOD DR	245	In Road	24	0.0	No	No	0	Good	No	No	0.0	7.5	Sound	25	Sound	Sound	3	Precast	Sound	None	Sound	Brick														
6_215	2-94	WEDGEWOOD DR	212	Grass	23	0.0	No	No	0	Good	No	No	0.0	7.0	Sound	24	Cracked Reinforcement	2	Brick	Fractured	None	Sound	Brick	IR														Reline MH
6_215	6-215	HILLSIDE AVE	55	In Road	23	0.0	No	No	0	Good	No	No	0.0	4.2	Sound	25	Sound	Sound	1	Precast	Sound	None	Sound	Brick														
6-215	1176	KING ST		In Road	23	0	No	Yes	0	Good	No	No	0	5.8	Sound	24	Sound	Sound	4	Precast	Sound	None	Sound	Brick														
9_211E	2298	CHURCH ST	234	In Road	25	0.0	No	Yes	8	Good	No	No	0.0	15.0	Sound	22	Sound	Sound	5	Brick	Sound	None	Sound	Brick														
9_211E	2299	CHURCH ST	0	In Road																																		

Manhole Inspection Data

Subarea	Manhole Number	Location	Nearest House Number	Manhole Location	Cover Diam (in)	Height Above Grade (FT)	Watertight	Cover Vent	Cover Holes	Cover Condition	Potential Runoff	Evidence Surcharge	HT Surcharge (FT)	Depth Rim to Inv (FT)	Frame Condition	Chimney Diameter (in)	Chimney Condition	Steps Condition	Step Count	Wall Material	Wall Condition	I and I	Bench Condition	Bench Material	Defect 1 MACP Code	Defect 1 Depth From Rim (FT)	Defect 1 Clock Start	Defect 1 Clock Stop	Defect 2 MACP Code	Defect 2 Depth From Rim (FT)	Defect 2 Clock Start	Defect 2 Clock Stop	Defect 3 MACP Code	Rec Rehab 1		
9_211E	2299A	CHURCH ST	284	In Road																																
9_211E	2301	CHURCH ST	215	In Road	24	0.0	No	No	0	Good	No	No	0.0	10.8	Sound	25	Sound	Sound	5	Precast	Sound	None	Sound	Coated												
9_211E	7-37	CHURCH ST	331	In Road	25	0.0	No	Yes	8	Good	No	No	0.0	12.9	Sound	23	Sound	Broken	6	Brick	Sound	None	Sound	Coated												
9_211E	9-211	CHURCH ST	136	In Road	24	0.0	No	No	0	Good	No	No	0.0	7.6	Sound	25	Sound	No Steps	0	Brick	Sound	None	Sound	Brick												
9_211E	9-211C	CHURCH ST	90	In Road	24	0.0	No	No	0	Good	No	No	0.0	5.6	Sound	27	Sound	Sound	3	Precast	Sound	None	Sound	Brick												
9_211E	9-211D	CHURCH ST	87	In Road	24	0.0	No	No	0	Good	No	No	0.0	7.2	Sound	27	Sound	Sound	4	Precast	Sound	None	Sound	Brick												
9_211E	9-211E	CHURCH ST	8	In Road	24	0.0	No	No	0	Good	No	No	0.0	8.6	Sound	24	Sound	Sound	6	Precast	Sound	None	Sound	Brick												
9_211E	9-212	PARK PL	22	In Road	24	0.0	No	No	0	Good	No	No	0.0	5.4	Broken	25	Sound	No Steps	0	Brick	Sound	None	Sound	Brick												
9_211E	9-216	CHURCH ST	191	In Road	24	0.0	No	No	0	Good	No	No			Sound																					
9_211E	9-21E	CHURCH ST	8	In Road	24	0.0	No	No	0	Good	No	No	0.0	8.6	Sound	24	Sound	Sound	6	Precast	Sound	None	Sound	Brick												
9_211E	990	CHURCH ST	297	In Road		0.0	No	No	0	Good	No	No	0.0	1.0	Sound	0						None														

Manhole Inspection Data - Pipe Connections

Subarea	Manhole Number	Location	Out Pipe - 1					Pipe In - 1					Pipe In - 2					Pipe In - 3					Pipe In - 4					Comment/Defects							
			Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)		Clock Position	O/M Rating	Structural Rating	Drop Connection			
246	1104	SPRING ST	ACP	8	6	1	1	ACP	8	12	1	1	No	PVC	8	9	1	1	No																
246	1105	GUS ST	ACP	8	6	1	1	CIP	8	12	1	1	No	PVC	8	3	1	1																	
246	1105A	GUS ST	PVC	8	6	1	1	PVC	8	12	1	1	No																						
246	1129	SPRING ST	PVC	8	6	1	1	RCP	8	11	1	1	No																						
246	1132	SPRING ST	ACP	8	6	1	1	ACP	8	12	1	1	No		0	0					0	0													
246	1132.1	SPRING ST	ACP	10	6	1	1	ACP	8	12	1	1	No	ACP	8	3	1	1	No																
246	2-1	PORTER AVE	PVC	12	6	1	1	PVC	12	12	1	1																							
246	2-10	PORTER AVE	PVC	12	6	1		PVC	12	12	1	1	No																						
246	2-11	PORTER AVE	PVC	12	6	1	1	PVC	12	12	1	1	Yes																						
246	2-12	PORTER AVE	PVC	12	6	1	1	PVC	12	12	1	1	No																						
246	2-14	SPRING ST	PVC	10	6	1	1	ACP	8	10	1		No	PVC	8	1	1	1	No	ACP	10	0	1	1	No										
246	2-15	SPRING ST	RCP	8	6	1	1	PVC	8	12	1	1	No																					Part or frame at bottom of mh	
246	2-16	SPRING ST	PVC	8	6	1	1	PVC	8	12	1	1	No																						
246	2-16A	SPRING ST	PVC	8	6	1	1	PVC	8	12	1	1	No																						
246	2-16B	SPRING ST	PVC	8	6	1	1	PVC	8	3	1	1	No																						
246	2-16C	SPRING ST	RCP	8	6	1	1	PVC	8	12	1																								
246	2-17	GUS ST	PVC	8	6	5	1																												Lamphole blocked with dirt
246	2-2	PORTER AVE	PVC	12	6	1	1	PVC	12	1	1	1	No																						
246	2-22	SPRING ST	ACP	8	6	1	1	ACP	8	12	1	1	No		0	0					0	0												Potential water line in mh	
246	2-23	SPRING ST	ACP	8	6	1	1	ACP	8	12	1	1	Yes		0	0					0	0												Potential water line in mh	
246	2-3	PORTER AVE	PVC	12	6	1	1	PVC	12	12	1	1	No																						
246	2-4	PORTER AVE	RCP	12	6	1	1	ACP	8	9	1	1	No	PVC	12	12	1	1	No	PVC	8	3	1	1	No										
246	2-5	PORTER AVE	PVC	12	6	1	1	PVC	12	12	1		No		0	0					0	0													
246	2-6	PORTER AVE	PVC	12	6	1	1	PVC	12	12	1	1	No																						
246	2-7	PORTER AVE	PVC	12	6	1		PVC	12	12	1	1	No																						Clean and reinspect
246	2-8	PORTER AVE	PVC	12	6	1	1	PVC	12	12	1	1	No																						
246	6-193	PORTER AVE	PVC	12	6	1	1	PVC	12	12	1	1	No	PVC	8	3	1	1	Yes																
246	6-194	PORTER AVE	PVC	12	6	1	1	PVC	4	7	1	1	No	PVC	12	12	1	1	No	PVC	8	5	1	1											
246	6-195	PORTER AVE	PVC	12	6	1	1	PVC	12	1	1	1	No																						
246	6-197	PORTER AVE	PVC	12	6	1	1	PVC	12	11	1	1	No																						
246	7-12	BRIDGE ST (ROUTE 68)	RCP	24	6	1	1	RCP	24	11	1	1	No	ACP	8	12	1	1	No	ACP	8	1	1	1	No										
246	7-13	BRIDGE ST (ROUTE 68)	RCP	24	6	1	1	CIP	8	3	1	1	No	RCP	24	12	1	1	No																
246	7-38	CROWN ST	ACP	8	6	1	1	ACP	8	12	1	1	No																						
10_198	10-198	RUBBER AVE	Other	0	6	1	1	Other	0	12	1	1	No	Other	0	3	1	1	No																Pipe entry into smh offset unable to determine pipe size and material
10_198	10-202	WATER ST	Other	24	6	1	1	CIP	12	11	1	1	No	Other	24	12	1	1	No																Can't determine pipe material for in at 12 or out pipe

Manhole Inspection Data - Pipe Connections

Subarea	Manhole Number	Location	Out Pipe - 1					Pipe In - 1					Pipe In - 2					Pipe In - 3					Pipe In - 4					Comment/Defects						
			Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)		Clock Position	O/M Rating	Structural Rating	Drop Connection		
10_198	10-202A	WATER ST	RCP	24	6	1	1	RCP	24	12	1	1	No																					
10_198	10-204	WATER ST	RCP	24	6	1	1	RCP	24	12	1	1	No																				Photo has evidence of surcharge	
10_198	10-207	RUBBER AVE	Other	24	6	1	1	Other	24	12	1	1	No																					
10_198	7-1	WATER ST	RCP	24	6	1	1	CIP	8	9	1	1	Yes	RCP	24	12	1	1	No	Other	0	3	1	1	No								In pipe at 3 o'clock cant determine size or material	
10_198	7-1A	WATER ST	RCP	24	6	1	1	RCP	24	12	1	1	No																					
10_198	7-2	WATER ST	RCP	24	6	1	1	RCP	24	12	1	1																						
10_198	7-4	WATER ST	RCP	24	6	1	1	RCP	24	2	1	1	No																					
10_198	9-1	RUBBER AVE	RCP	24	6	1	1	ACP	12	9	1	1	No	RCP	24	12	1	1	Yes														MB IN BENCH AT BOTTOM OF IN PIPE AT 9 OCLOCK	
10_198	9-2	RUBBER AVE	RCP	24	6	1	1	RCP	24	12	1	1	No	ACP	10	3	1	1	No															
10_198	9-2A	RUBBER AVE	ACP	10	6	1	1	PVC	8	9	1	1	No	ACP	10	10	1	1	No															
6_1	2480	WEST HILL TER	PVC	8	6																												Lamphole	
6_1	6-11	MILLVILLE AVE	ACP	0	6	1	1	PVC	8	9	1	1	No	ACP	8	3	1	1	No														MMM in chimney	
6_1	6-12	MILLVILLE AVE	PVC	8	6	1	1	PVC	8	12	1	1	No																					
6_1	6-13	MILLVILLE AVE	PVC	8	6	1	1	PVC	8	0	1	1	No																				DSF on bench	
6_1	6-14	MILLVILLE AVE	PVC	8	6	1	1	PVC	8	12	1	1	No	PVC	8	3	1	1	No															
6_1	6-15	MILLVILLE AVE	PVC	8	6	1	1	PVC	8	12	1	1	No																					
6_1	6-16	MILLVILLE AVE	PVC	8	6	1	1	PVC	8	12	1	1	No																					
6_1	6-17	WEST HILL TER	RCP	8	6	1	1	PVC	8	9	1	1																						
6_1	6-19	WESTVIEW DR	PVC	8	6	1	1	PVC	8	10	1	1	No																					
6_1	6-20	WESTVIEW DR	PVC	0	6	1	1	PVC	8	12	1	1	No	PVC	12	12	1	1	No															
6_1	6-21	WESTVIEW DR	PVC	8	6	1	1	PVC	8	3	1	1	No																				IS from joint at bottom of chimney	
6_1	6-23	WEST HILL TER	PVC	8	6	1	1	PVC	8	12	1	1	No																					
6_215	1094	RIDGE RD	RCP	12	6	1	1	RCP	12	10	1	1	No	RCP	12	12	1	1	No	RCP	12	2	1	1	No									
6_215	1097	RIDGE RD	RCP	12	6	1	1	RCP	12	12	1	1	No	RCP	8	12	1	1	No															
6_215	1099	ROUND TREE DR	RCP	6	6	1	1																											
6_215	1102	COACH CIR	RCP	12	6	1	1	RCP	10	12	1	1	No	RCP	8	3	1	1																
6_215	1166	HERITAGE DR	PVC	8	6	1	1	PVC	8	12	1	1	No																					
6_215	1167	TIMOTHY RD	PVC	8	6	1	1	PVC	8	11	1	1	No	PVC	8	4	1	1	No															Missing/loose bricks in chimney
6_215	1169	INGA CIR	PVC	8	6	1	1	PVC	8	12	1	1	No																					Connectivity doesn't match map
6_215	1172	BRIDLE TRAIL DR	PVC	8	6	1	1	PVC	8	2	1	1	No																					
6_215	1178	BRIDLE TRAIL DR	PVC	8	6	1	1	PVC	6	12	1	1	No																					
6_215	1179	BRIDLE TRAIL DR	PVC	8	6	1	1	PVC	8	12	1	1	No																					
6_215	2335	FIELD ST	PVC	8	6	1	1	PVC	8	3	1	1	No	PVC	8	12	1	1	No															
6_215	2337	FIELD ST	PVC	8	6	1	1	PVC	8	12	1	1	No																					
6_215	2339	FIELD ST	PVC	8	6	1	1																											

Manhole Inspection Data - Pipe Connections

Subarea	Manhole Number	Location	Out Pipe - 1					Pipe In - 1					Pipe In - 2					Pipe In - 3					Pipe In - 4					Comment/Defects							
			Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)		Clock Position	O/M Rating	Structural Rating	Drop Connection			
6_215	2-34	FIELD ST	ACP	8	6	1	1	ACP	8	12	1	1	No								0	0													
6_215	2340	KING ST	RCP	8	6	1	1	PVC	8	12	1	1	No																						
6_215	2341	FAIRFIELD CT	PVC	8	6	1	1	PVC	8	12	1	1	No																						
6_215	2342	FAIRFIELD CT	PVC	8	6	1	1																									IS from bottom of chimney			
6_215	2-35	FIELD ST			6	5	1	PVC	8	0	1	1	No								0	0										Manhole surcharged; Potential blockage in out pipe			
6_215	2-36	KING ST	PVC	8	6	1	1	PVC	8	9	1	1	No	PVC	8	12	1	1	No													Coating in chimney loose/ wall offset from chimney cant see			
6_215	2365	HILLSIDE AVE	CIP	12	6	1	1	CIP	12	1	1	1	No																						
6_215	2-37	FIELD ST	ACP	8	6	1	1	ACP	8	12	1	1	No	PVC	8	3	1	1	No		0	0													
6_215	2-40	MILL ST	RCP	12	6	1	1	RCP	12	12	1	1	No																						
6_215	2-41	MILL ST	RCP	12	6	1	1	RCP	12	12	1	1	No																						
6_215	2-42	MILL ST	PVC	12	6	1	1	PVC	12	1	1	1	No																						
6_215	2429	BRIDLE TRAIL DR	PVC	8	6	1	1	PVC	8	10	1	1	No	PVC	8	2	1	1	No																
6_215	2429a	BRIDLE TRAIL DR	PVC	8	6	1	1	PVC	8	12	1	1	No																						
6_215	2-43	MILL ST	RCP	10	6	1	1	PVC	8	11	1	1	No	PVC	8	12	1	1	No	PVC	8	4	1	1	No										
6_215	2-45	MILL ST	PVC	8	6	1	1	PVC	8	11	1	1	No								0	0													
6_215	2-46	MILL ST	PVC	8	6	1	1	PVC	8	12	1	1	No								0	0													
6_215	2-47	MILL ST	PVC	8	6	1	1	PVC	0	6	1	1	No	PVC	8	11	1	1	No		0	0													
6_215	2479	WEDGEWOOD DR	PVC	8	6	1	1	PVC	8	12	1	1	No																				Was checking for loose brick/brick fell out		
6_215	2-48	LANTERN PARK DR	RCP	12	6	3	1	RCP	12	12	1	1	No	PVC	8	3	1	1	No														DAGS in out pipe		
6_215	2-49	LANTERN PARK DR	RCP	12	6	1	1	RCP	12	12	1	1	No																						
6_215	2-50	LANTERN PARK DR	RCP	12	6	1	1	RCP	12	12	1	1	No																						
6_215	2-51	LANTERN PARK DR	RCP	12	6	1	1	RCP	12	1	1	1	No	PVC	8	5	1	1	Yes																
6_215	2-53	LANTERN PARK DR	RCP	12	6	1	1	RCP	12	12	1	1	No	RCP	8	3	1	1																DSGV 5% blockage in trough	
6_215	2-54	LANTERN PARK DR	RCP	12	6	1	1	RCP	12	10	1	1	No																						
6_215	2-55	LANTERN PARK DR	RCP	12	6	1	1	PVC	10	10	1	1	Yes	PVC	10	11	1	1	Yes	RCP	12	12	1	1	Yes	RCP	12	9	1	1	No				
6_215	2-56	COACH CIR	RCP	12	6	1	1	RCP	12	11	4	1	No	RCP	12	1	1	1	No	PVC	8	3	1	1	No									DRS IN IN PIPE AT 11	
6_215	2-57	COACH CIR	RCP	10	6	1	1	RCP	8	9	1	1	No	RCP	8	12	1	1	No																
6_215	2-61	KING ST	RCP	8	6	1	1	RCP	8	9	1	1	No																						
6_215	2-63	FIELD ST	PVC	8	6	1	1	PVC	8	9	1	1	No	CIP	8	2	1	1	No		0	0													
6_215	2-64	PARTRIDGETOWN RD	PVC	8	6	1	1	PVC	8	12	1	1	Yes	PVC	8	3	1	1	No																
6_215	2-65	PARTRIDGETOWN RD	PVC	8	6	1	1	PVC	8	12	1	1	No																						
6_215	2-66	PARTRIDGETOWN RD	PVC	8	6	1	1	PVC	8	9	1	1	No	RCP	8	12	1	1	No																Pavement worn around frame
6_215	2-67	PARTRIDGETOWN RD	PVC	8	6	2	1	PVC	8	12	1	1	No																					MMM in chimney/ minor blockage in out pipe	
6_215	2-68	PARTRIDGETOWN RD	PVC	8	6	1	1	PVC	8	12	1	1	No																						
6_215	2-69	PARTRIDGETOWN RD	PVC	8	6	1	1	PVC	8	12	1	1	No																						MMM in chimney

Manhole Inspection Data - Pipe Connections

Subarea	Manhole Number	Location	Out Pipe - 1					Pipe In - 1					Pipe In - 2					Pipe In - 3					Pipe In - 4					Comment/Defects			
			Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)	Clock Position	O/M Rating	Structural Rating	Drop Connection	Material	Diameter (in)		Clock Position	O/M Rating	Structural Rating
6_215	2-70	TIMOTHY RD	PVC	10	6	1	1	PVC	10	0	1	1	No																		
6_215	2-71	FLANDERS RD	PVC	10	6	1	1																							No bench/trough standing water below pipe	
6_215	2-72	STONEBROOK RD	Other	0	6	1	1	Other	0	0	1	1	No																	Unable to determine pipe size and material pipes offset from mh	
6_215	2-73	STONEBROOK RD	PVC	8	6	1	1	Other	0	3	1	1	No				1	1	No		0	0								Both in pipes offset can't determine pipe material and size	
6_215	2-75	STONEBROOK RD	PVC			1	1	VCP	8	9	1	1	Yes		0	0					0	0									
6_215	2-77	TIMOTHY RD	PVC	8	6	1	1	PVC	8	12	1	1	No	PVC	8	3	1	1	No												
6_215	2-82	WEDGEWOOD DR	PVC	8	6	1	1	PVC	8	10	1	1	No	PVC	8	2	1	1	No												
6_215	2-84	HERITAGE DR	PVC	8	6	1	1	PVC	6	9	1	1	No	PVC	8	12	1	1	No												
6_215	2-85	PILGRIM LN	PVC	8	6	1	1	PVC	8	12	1	1	No	PVC	8	9	1	1	No												
6_215	2-86	PILGRIM LN	PVC	8	6	1	1																								
6_215	2-87	TANGLEWOOD LN	PVC	8	6	1	1	PVC	8	10	1	1	No																		
6_215	2-88	TANGLEWOOD LN	PVC	8	6	1	1	PVC	8	9	1	1	No	PVC	8	3	1	1	No												
6_215	2-90	TANGLEWOOD LN	PVC	8	6	1	1	PVC	8	12	1	1	No																		
6_215	2-91	WEDGEWOOD DR	PVC	8	6	1	1	PVC	8	11	1	1	No		0	0															
6_215	2-92	WEDGEWOOD DR	PVC	8	6	1	1	VCP	8	1	1	1	No		0	0															
6_215	2-93	WEDGEWOOD DR	PVC	8	6	1	1	PVC	8	12	1	1	Yes		0	0															
6_215	2-94	WEDGEWOOD DR	ACP	10	6	1	1	ACP	10	11	1	1	No		0	0															
6_215	6-215	HILLSIDE AVE	CIP	12	6	1	1	PVC	6	3	1	1	No	CIP	12	12	1	1	No												
6-215	1176	KING ST	PVC	8	6	1	1																							No GPS Position Recorded	
9_211E	2298	CHURCH ST	PVC	12	6	1	1	ACP	12	10	1	1	No	PVC	12	3	1	1	No												
9_211E	2299	CHURCH ST																												Lamphole	
9_211E	2299A	CHURCH ST																												Lamphole	
9_211E	2301	CHURCH ST	ACP	10	6	1	1	ACP	8	3	1	1	No																		
9_211E	7-37	CHURCH ST	Other	12	6	1	1	Other	12	12	1	1	No	Other	8	9	1	1	No											Can't determine pipe material	
9_211E	9-211	CHURCH ST	PVC	10	6	1	1	PVC	8	10	1	1	No	PVC	10	12	1	1	No												
9_211E	9-211C	CHURCH ST	PVC	10	6	1	1	PVC	6	11	1	1	No	PVC	10	12	1	1	No												
9_211E	9-211D	CHURCH ST	RCP	10	6	1	1	RCP	10	12	1	1	No																		
9_211E	9-211E	CHURCH ST	ACP	10	6	1	1	ACP	10	12	1	1	No																		
9_211E	9-212	PARK PL	ACP	10	6	1	1	ACP	10	11	1	1	No	ACP	10	1	1	1													
9_211E	9-216	CHURCH ST																												Lamphole	
9_211E	9-21E	CHURCH ST	ACP	10	6	1	1	ACP	10	12	1	1	No																		
9_211E	990	CHURCH ST																												Lamphole	

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/28/2016	246	2-21	SPRING ST	363	In Road	No	2-21_A.jpg				Manhole Could Not be Opened (NO)	Cover seized
7/28/2016	246	2-25	SPRING ST	357	In Road	No	2-25_A.jpg				Manhole Could Not be Opened (NO)	Cover seized
7/29/2016	246	6-192	PORTER AVE	0	Wooded / Easement	No	6-192_A.jpg				Manhole Could Not be Opened (NO)	MH in river
7/29/2016	246	7-10	BRIDGE ST (ROUTE 68)	0	Wooded / Easement	No	7-10_A.jpg				Manhole Could Not be Opened (NO)	MH in river
7/29/2016	246	7-30	NORTH CHURCH ST (ROUT	0	Other	No	7-30_A.jpg				Manhole Could Not be Opened (NO)	MH in river
8/1/2016	246	7-11	BRIDGE ST (ROUTE 68)	0	River	No	7-11_A.jpg				No Access	MH in river
8/2/2016	246	1130	GUS ST	0	Wooded / Easement	No					Not Found (NF)	
7/29/2016	246	1131	PORTER AVE	0	Wooded / Easement	No					Not Found (NF)	
8/2/2016	246	2-18	SPRING ST	0	Wooded / Easement	No					Not Found (NF)	
8/2/2016	246	246	BRIDGE ST (ROUTE 68)	0	Wooded / Easement	No					Not Found (NF)	
7/29/2016	246	2-9	PORTER AVE	0	Wooded / Easement	No					Not Found (NF)	
7/29/2016	246	690	PORTER AVE	0	Wooded / Easement	No					Not Found (NF)	
7/29/2016	246	xxxx000110	PORTER AVE	0	Wooded / Easement	No					Not Found (NF)	
7/28/2016	246	1104	SPRING ST	419	In Road	Yes	1104_A.jpg	1104_B.jpg	1104_C.jpg		Surface Inspection (SI)	
7/28/2016	246	1105	GUS ST	32	In Road	Yes	1105_A.jpg	1105_B.jpg	1105_C.jpg	1105_D.jpg	Surface Inspection (SI)	
7/28/2016	246	1105A	GUS ST	20	In Road	Yes	1105A_A.jpg	1105A_B.jpg	1105A_C.jpg		Surface Inspection (SI)	
8/2/2016	246	1129	SPRING ST	0	Driveway	Yes	1129_A.jpg	1129_B.jpg	1129_C.jpg		Surface Inspection (SI)	
7/28/2016	246	1132	SPRING ST	553	In Road	Yes	1132_A.jpg	1132_B.jpg	1132_C.jpg		Surface Inspection (SI)	
7/28/2016	246	1132.1	SPRING ST	0	In Road	Yes	1132_1_A.jpg	1132_1_B.jpg	1132_1_C.jpg		Surface Inspection (SI)	
8/4/2016	246	1132.2	SPRING ST	0	In Road	Yes	1132_2_A.jpg				Traffic	unable to open no police detail
7/29/2016	246	2-1	PORTER AVE	0	Wooded / Easement	Yes	2-1_A.jpg	2-1_B.jpg	2-1_C.jpg		Surface Inspection (SI)	
7/29/2016	246	2-10	PORTER AVE	0	Wooded / Easement	Yes	2-10_A.jpg	2-10_B.jpg	2-10_C.jpg		Surface Inspection (SI)	
7/29/2016	246	2-11	PORTER AVE	0	Wooded / Easement	Yes	2-11_A.jpg	2-11_B.jpg	2-11_C.jpg		Surface Inspection (SI)	
7/29/2016	246	2-12	PORTER AVE	0	Wooded / Easement	Yes	2-12_A.jpg	2-12_B.jpg	2-12_C.jpg		Surface Inspection (SI)	
7/28/2016	246	2-14	SPRING ST	0	In Road	Yes	2-14_A.jpg	2-14_B.jpg	2-14_C.jpg		Surface Inspection (SI)	
8/2/2016	246	2-15	SPRING ST	0	Driveway	Yes	2-15_A.jpg	2-15_B.jpg	2-15_C.jpg	2-15_D.jpg	Surface Inspection (SI)	Part or frame at bottom of mh

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8/2/2016	246	2-16	SPRING ST	0	Driveway	Yes	2-16_A.jpg	2-16_B.jpg	2-16_C.jpg		Surface Inspection (SI)	
8/4/2016	246	2-16A	SPRING ST	0	Driveway	Yes	2-16A_A.jpg	2-16A_B.jpg	2-16A_C.jpg		Surface Inspection (SI)	
8/4/2016	246	2-16B	SPRING ST	0	Driveway	Yes	2-16B_A.jpg	2-16B_B.jpg	2-16B_C.jpg		Surface Inspection (SI)	
8/4/2016	246	2-16C	SPRING ST	0	Parking Lot	Yes	2-16C_A.jpg	2-16C_B.jpg	2-16C_C.jpg		Surface Inspection (SI)	
7/28/2016	246	2-17	GUS ST	0	In Road	Yes	2-17_A.jpg	2-17_B.jpg	2-17_C.jpg		Surface Inspection (SI)	Lamphole blocked with dirt
7/29/2016	246	2-2	PORTER AVE	0	Wooded / Easement	Yes	2-2_A.jpg	2-2_B.jpg	2-2_C.jpg		Surface Inspection (SI)	
7/28/2016	246	2-22	SPRING ST	409	In Road	Yes	2-22_A.jpg	2-22_B.jpg	2-22_C.jpg		Surface Inspection (SI)	Potential water line in mh
7/28/2016	246	2-23	SPRING ST	403	In Road	Yes	2-23_A.jpg	2-23_B.jpg	2-23_C.jpg		Surface Inspection (SI)	Potential water line in mh
7/29/2016	246	2-3	PORTER AVE	0	Wooded / Easement	Yes	2-3_A.jpg	2-3_B.jpg	2-3_C.jpg		Surface Inspection (SI)	
7/28/2016	246	2-4	PORTER AVE	55	In Road	Yes	2-4_A.jpg	2-4_B.jpg	2-4_C.jpg		Surface Inspection (SI)	
7/29/2016	246	2-5	PORTER AVE	0	Wooded / Easement	Yes	2-5_A.jpg	2-5_B.jpg	2-5_C.jpg		Surface Inspection (SI)	
7/29/2016	246	2-6	PORTER AVE	0	Wooded / Easement	Yes	2-6_A.jpg	2-6_B.jpg	2-6_C.jpg		Surface Inspection (SI)	
7/29/2016	246	2-7	PORTER AVE	0	Wooded / Easement	Yes	2-7_A.jpg	2-7_B.jpg	2-7_C.jpg		Surface Inspection (SI)	Clean and reinspect
7/29/2016	246	2-8	PORTER AVE	0	Wooded / Easement	Yes	2-8_A.jpg	2-8_B.jpg	2-8_C.jpg		Surface Inspection (SI)	
7/29/2016	246	6-193	PORTER AVE	0	Wooded / Easement	Yes	6-193_A.jpg	6-193_B.jpg	6-193_C.jpg		Surface Inspection (SI)	
7/29/2016	246	6-194	PORTER AVE	0	Wooded / Easement	Yes	6-194_A.jpg	6-194_B.jpg	6-194_C.jpg		Surface Inspection (SI)	
7/29/2016	246	6-195	PORTER AVE	0	Wooded / Easement	Yes	6-195_A.jpg	6-195_B.jpg	6-195_C.jpg		Surface Inspection (SI)	
7/29/2016	246	6-197	PORTER AVE	0	Wooded / Easement	Yes	6-197_A.jpg	6-197_B.jpg	6-197_C.jpg		Surface Inspection (SI)	
7/27/2016	246	7-12	BRIDGE ST (ROUTE 68)	40	In Road	Yes	7-12_A.jpg	7-12_B.jpg	7-12_C.jpg		Surface Inspection (SI)	
7/27/2016	246	7-13	BRIDGE ST (ROUTE 68)	34	In Road	Yes	7-13_A.jpg	7-13_B.jpg	7-13_C.jpg		Surface Inspection (SI)	
7/27/2016	246	7-38	CROWN ST	35	In Road	Yes	7-38_A.jpg	7-38_B.jpg	7-38_C.jpg		Surface Inspection (SI)	
8/2/2016	10_198	7-8	WATER ST	0	Wooded / Easement	No					No Access	MH inaccessible due to RR and River
8/2/2016	10_198	7-9	BRIDGE ST (ROUTE 68)	0	Wooded / Easement	No					No Access	MH inaccessible due to RR and River
8/2/2016	10_198	10-197	RUBBER AVE	0	Wooded / Easement	No					No Access	LOCATED IN RR ROW
8/2/2016	10_198	243	RR ROW	0	Wooded / Easement	No					No Access	MH inaccessible due to RR and River
8/2/2016	10_198	xxxx000098	WATER ST	0	Wooded / Easement	No					Not Found (NF)	

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/27/2016	10_198	10-203	WATER ST	0	In Road	No	10-203_A.jpg				Paved Over (PO)	
7/27/2016	10_198	7-3	WATER ST	0	In Road	No	7-3_A.jpg				Paved Over (PO)	
8/2/2016	10_198	10-198	RUBBER AVE	0	Parking Lot	Yes	10-198_A.jpg	10-198_B.jpg	10-198_C.jpg		Surface Inspection (SI)	Pipe entry into smh offset unable to determine pipe size and material
7/27/2016	10_198	10-202	WATER ST	100	In Road	Yes	10-202_A.jpg	10-202_B.jpg	10-202_C.jpg		Surface Inspection (SI)	Can't determine pipe material for in at 12 or out pipe
7/27/2016	10_198	10-202A	WATER ST	100	In Road	Yes	10-202A_A.jpg	10-202A_B.jpg	10-202A_C.jpg		Surface Inspection (SI)	
7/27/2016	10_198	10-204	WATER ST	0	In Road	Yes	10-204_A.jpg	10-204_B.jpg	10-204_C.jpg	10-204_D.jpg	Surface Inspection (SI)	Photo has evidence of surcharge
7/26/2016	10_198	10-207	RUBBER AVE	0	Parking Lot	Yes	10-207_A.jpg	10-207_B.jpg	10-207_C.jpg		Surface Inspection (SI)	
7/27/2016	10_198	7-1	WATER ST	0	In Road	Yes	7-1_A.jpg	7-1_B.jpg	7-1_C.jpg		Surface Inspection (SI)	In pipe at 3 o'clock cant determine size or material
7/27/2016	10_198	7-1A	WATER ST	202	In Road	Yes	7-1A_A.jpg	7-1A_B.jpg	7-1A_C.jpg		Surface Inspection (SI)	
7/27/2016	10_198	7-2	WATER ST	0	In Road	Yes	7-2_A.jpg	7-2_B.jpg	7-2_C.jpg		Surface Inspection (SI)	
7/27/2016	10_198	7-4	WATER ST	0	In Road	Yes	7-4_A.jpg	7-4_B.jpg	7-4_C.jpg		Surface Inspection (SI)	
7/26/2016	10_198	9-1	RUBBER AVE	0	In Road	Yes	9-1_A.jpg	9-1_B.jpg	9-1_C.jpg		Surface Inspection (SI)	MB IN BENCH AT BOTTOM OF IN PIPE AT 9 OCLOCK
7/26/2016	10_198	9-2	RUBBER AVE	0	In Road	Yes	9-2_A.jpg	9-2_B.jpg	9-2_C.jpg		Surface Inspection (SI)	
7/26/2016	10_198	9-2A	RUBBER AVE	0	In Road	Yes	9-2A_A.jpg	9-2A_B.jpg	9-2A_C.jpg		Surface Inspection (SI)	
8/2/2016	10_198	244	RR ROW	0	Wooded / Easement	No					No Access	MH inaccessible due to RR and River
8/2/2016	10_198	981	RR ROW	0	Wooded / Easement	No					No Access	LOCATED IN RR ROW

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
8/2/2016	10_198	983	RR ROW	0	Wooded / Easement	No					No Access	LOCATED IN RR ROW
8/2/2016	10_198	7-5	RR ROW	0	Wooded / Easement	No					No Access	MH inaccessible due to RR and River
8/2/2016	10_198	7-20	RR ROW	0	Wooded / Easement	No					No Access	RR ROW
8/2/2016	10_198	10-200	RR ROW	0	Wooded / Easement	No					No Access	LOCATED IN RR ROW
8/2/2016	10_198	10-201	RR ROW	0	Wooded / Easement	No					No Access	LOCATED IN RR ROW
7/29/2016	6_1	6-8	RUBBER AVE	0	Parking Lot	No					No Access	Property surrounded by barbed wire fence. Appears abandoned.
7/29/2016	6_1	6-10	RUBBER AVE	0	Wooded / Easement	No					Not Found (NF)	Under school athletic fields
7/28/2016	6_1	6-18	WESTVIEW DR		Other	No					Not Found (NF)	
8/1/2016	6_1	6-22	WESTVIEW DR	0	Wooded / Easement	No					Not Found (NF)	
7/29/2016	6_1	6-9	RUBBER AVE	0	Wooded / Easement	No					Not Found (NF)	Under school athletic fields
7/22/2016	6_1	6-1	RUBBER AVE	620	In Road	No	6-1_A.jpg				Paved Over (PO)	
7/22/2016	6_1	6-24	MILLVILLE AVE	537	In Road	No	6-24_A.jpg				Paved Over (PO)	
7/22/2016	6_1	2480	WEST HILL TER	59	In Road	Yes	2480_A.jpg	2480_B.jpg	2480_C.jpg		Surface Inspection (SI)	Lamphole
7/22/2016	6_1	6-11	MILLVILLE AVE	597	In Road	Yes		6-11_B.jpg	6-11_C.jpg		Surface Inspection (SI)	MMM in chimney

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/22/2016	6_1	6-12	MILLVILLE AVE	547	In Road	Yes	6-12_A.jpg	6-12_B.jpg	6-12_C.jpg		Surface Inspection (SI)	
7/22/2016	6_1	6-13	MILLVILLE AVE	617	In Road	Yes	6-13_A.jpg	6-13_B.jpg	6-13_C.jpg		Surface Inspection (SI)	DSF on bench
7/22/2016	6_1	6-14	MILLVILLE AVE	647	In Road	Yes	6-14_A.jpg	6-14_B.jpg	6-14_C.jpg		Surface Inspection (SI)	
7/22/2016	6_1	6-15	MILLVILLE AVE	657	In Road	Yes	6-15_A.jpg	6-15_B.jpg	6-15_C.jpg		Surface Inspection (SI)	
7/22/2016	6_1	6-16	MILLVILLE AVE	675	In Road	Yes	6-16_A.jpg	6-16_B.jpg	6-16_C.jpg	6-16_D.jpg	Surface Inspection (SI)	
7/22/2016	6_1	6-17	WEST HILL TER	27	In Road	Yes	6-17_A.jpg	6-17_B.jpg	6-17_C.jpg		Surface Inspection (SI)	
7/22/2016	6_1	6-19	WESTVIEW DR	19	In Road	Yes	6-19_A.jpg	6-19_B.jpg	6-19_C.jpg	6-19_D.jpg	Surface Inspection (SI)	
7/22/2016	6_1	6-20	WESTVIEW DR	10	In Road	Yes	6-20_A.jpg	6-20_B.jpg	6-20_C.jpg	6-20_D.jpg	Surface Inspection (SI)	
7/22/2016	6_1	6-21	WESTVIEW DR	5	In Road	Yes	6-21_A.jpg	6-21_B.jpg	6-21_C.jpg		Surface Inspection (SI)	IS from joint at bottom of chimney
7/22/2016	6_1	6-23	WEST HILL TER	18	In Road	Yes	6-23_A.jpg	6-23_B.jpg	6-23_C.jpg		Surface Inspection (SI)	
7/22/2016	6_1	6-11A	MILLVILLE AVE	537	In Road	No	6-11A_A.jpg				Paved Over (PO)	
8/2/2016	6_215	2-60	KING ST	0	Grass	No					Buried Manhole (BM)	
8/2/2016	6_215	2-89	TANGLEWOOD LN	73	Grass	No	2-89_A.jpg				Buried Manhole (BM)	Cover seized
8/1/2016	6_215	1095	RIDGE RD	74	Grass	No	1095_A.jpg				Manhole Could Not be Opened (NO)	Cover seized and MH frame not attached to conc

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/25/2016	6_215	1174	BRIDLE TRAIL DR	129	In Road	No	1174_A.jpg				Manhole Could Not be Opened (NO)	Cover seized
8/1/2016	6_215	2-52	LANTERN PARK DR	0	Parking Lot	No	2-52_A.jpg				Manhole Could Not be Opened (NO)	Car parked onto of SMH; 2 Visits
8/2/2016	6_215	2-78	STONEBROOK RD	0	Wooded / Easement	No	2-78_A.jpg				Manhole Could Not be Opened (NO)	Concrete Cover
8/1/2016	6_215	1096	RIDGE RD	49	Other	No					Not Found (NF)	
8/1/2016	6_215	1098	ROUND TREE DR	60	Other	No					Not Found (NF)	
8/1/2016	6_215	1101	ROUND TREE DR	55	Other	No					Not Found (NF)	
7/26/2016	6_215	1165	HERITAGE DR			No					Not Found (NF)	
7/28/2016	6_215	1170	INGA CIR		Other	No					Not Found (NF)	Made two attempts to locate talked to home owner no recent paving
8/1/2016	6_215	2-38	FIELD ST	0	Other	No					Not Found (NF)	
8/2/2016	6_215	2-39	FIELD ST	0	Wooded / Easement	No					Not Found (NF)	
7/28/2016	6_215	2-44	MILL ST		Other	No					Not Found (NF)	
8/2/2016	6_215	2-59	LANTERN PARK DR	0	Wooded / Easement	No					Not Found (NF)	
7/28/2016	6_215	2-62	KING ST		Other	No					Not Found (NF)	
8/2/2016	6_215	2-79	STONEBROOK RD	0	Wooded / Easement	No					Not Found (NF)	

Naugatuck, CT
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Photo Log

Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
8/2/2016	6_215	2-80	STONEBROOK RD	0	Wooded / Easement	No					Not Found (NF)	
8/2/2016	6_215	2-81	BRIDLE TRAIL DR	0	Wooded / Easement	No					Not Found (NF)	
7/28/2016	6_215	xxxx0000106	DEEPWOOD RD		Other	No					Not Found (NF)	
7/28/2016	6_215	xxxx000105	TANGLEWOOD LN		Other	No					Not Found (NF)	
7/28/2016	6_215	xxxx000515	KING ST		Other	No					Not Found (NF)	
7/22/2016	6_215	2336	FIELD ST	277	In Road	No	2336_A.jpg				Paved Over (PO)	
7/28/2016	6_215	2-34.1	FIELD ST	28	In Road	No	2-34_1_A.jpg				Paved Over (PO)	
7/27/2016	6_215	2364	HILLSIDE AVE	577	In Road	No	2364_A.jpg				Paved Over (PO)	
7/28/2016	6_215	2-76	STONEBROOK RD			No					Paved Over (PO)	Newly paved driveway
8/1/2016	6_215	1094	RIDGE RD	93	In Road	Yes	1094_A.jpg	1094_B.jpg	1094_C.jpg	1094_D.jpg	Surface Inspection (SI)	
8/1/2016	6_215	1097	RIDGE RD	31	Grass	Yes	1097_A.jpg	1097_B.jpg	1097_C.jpg		Surface Inspection (SI)	
8/1/2016	6_215	1099	ROUND TREE DR	30	Grass	Yes	1099_A.jpg	1099_B.jpg	1099_C.jpg		Surface Inspection (SI)	
8/1/2016	6_215	1102	COACH CIR	27	Parking Lot	Yes	1102_A.jpg	1102_B.jpg	1102_C.jpg		Surface Inspection (SI)	
7/26/2016	6_215	1166	HERITAGE DR	57	In Road	Yes	1166_A.jpg	1166_B.jpg	1166_C.jpg		Surface Inspection (SI)	

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Photo Log**

Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/25/2016	6_215	1167	TIMOTHY RD	344	In Road	Yes	1167_A.jpg	1167_B.jpg	1167_C.jpg		Surface Inspection (SI)	Missing/loose bricks in chimney
7/25/2016	6_215	1169	INGA CIR	9	In Road	Yes	1169_A.jpg	1169_B.jpg	1169_C.jpg		Surface Inspection (SI)	Connectivity doesn't match map
7/25/2016	6_215	1172	BRIDLE TRAIL DR	30	In Road	Yes	1172_A.jpg	1172_B.jpg	1172_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	1178	BRIDLE TRAIL DR	48	In Road	Yes	1178_A.jpg	1178_B.jpg	1178_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	1179	BRIDLE TRAIL DR	41	In Road	Yes	1179_A.jpg	1179_B.jpg	1179_C.jpg		Surface Inspection (SI)	
7/22/2016	6_215	2335	FIELD ST	261	In Road	Yes	2335_A.jpg	2335_B.jpg	2335_C.jpg		Surface Inspection (SI)	
7/22/2016	6_215	2337	FIELD ST	287	In Road	Yes	2337_A.jpg	2337_B.jpg	2337_C.jpg		Surface Inspection (SI)	
7/22/2016	6_215	2339	FIELD ST	306	In Road	Yes	2339_A.jpg	2339_B.jpg	2339_C.jpg		Surface Inspection (SI)	
7/28/2016	6_215	2-34	FIELD ST	37	Parking Lot	Yes	2-34_A.jpg	2-34_B.jpg	2-34_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2340	KING ST	31	In Road	Yes	2340_A.jpg	2340_B.jpg	2340_C.jpg		Surface Inspection (SI)	
7/22/2016	6_215	2341	FAIRFIELD CT	1	In Road	Yes	2341_A.jpg	2341_B.jpg	2341_C.jpg		Surface Inspection (SI)	
7/22/2016	6_215	2342	FAIRFIELD CT	29	Parking Lot	Yes	2342_A.jpg	2342_B.jpg	2342_C.jpg		Surface Inspection (SI)	IS from bottom of chimney
7/28/2016	6_215	2-35	FIELD ST	47	In Road	Yes	2-35_A.jpg	2-35_B.jpg	2-35_C.jpg		Surface Inspection (SI)	Manhole surcharged; Potential blockage in out pipe
7/25/2016	6_215	2-36	KING ST	79	In Road	Yes	2-36_A.jpg	2-36_B.jpg	2-36_C.jpg	2-36_D.jpg	Surface Inspection (SI)	Coating in chimney loose/ wall offset from chimney cant see

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/27/2016	6_215	2365	HILLSIDE AVE	580	In Road	Yes	2365_A.jpg	2365_B.jpg	2365_C.jpg		Surface Inspection (SI)	
7/28/2016	6_215	2-37	FIELD ST	100	In Road	Yes	2-37_A.jpg	2-37_B.jpg	2-37_C.jpg		Surface Inspection (SI)	
8/1/2016	6_215	2-40	MILL ST	0	Sidewalk	Yes	2-40_A.jpg	2-40_B.jpg	2-40_C.jpg		Surface Inspection (SI)	
8/1/2016	6_215	2-41	MILL ST	0	Sidewalk	Yes	2-41_A.jpg	2-41_B.jpg	2-41_C.jpg	2-41_D.jpg	Surface Inspection (SI)	
8/1/2016	6_215	2-42	MILL ST	0	Sidewalk	Yes	2-42_A.jpg	2-42_B.jpg	2-42_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2429	BRIDLE TRAIL DR	18	In Road	Yes	2429_A.jpg	2429_B.jpg	2429_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2429a	BRIDLE TRAIL DR	5	In Road	Yes	2429a_A.jpg	2429a_B.jpg	2429a_C.jpg		Surface Inspection (SI)	
7/28/2016	6_215	2-43	MILL ST	0	In Road	Yes	2-43_A.jpg	2-43_B.jpg	2-43_C.jpg		Surface Inspection (SI)	
7/28/2016	6_215	2-45	MILL ST	105	In Road	Yes	2-45_A.jpg	2-45_B.jpg	2-45_C.jpg		Surface Inspection (SI)	
7/28/2016	6_215	2-46	MILL ST	105	In Road	Yes	2-46_A.jpg	2-46_B.jpg	2-46_C.jpg		Surface Inspection (SI)	
7/28/2016	6_215	2-47	MILL ST	65	In Road	Yes	2-47_A.jpg	2-47_B.jpg	2-47_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2479	WEDGEWOOD DR	320	In Road	Yes	2479_A.jpg	2479_B.jpg	2479_C.jpg		Surface Inspection (SI)	Was checking for loose brick/brick fell out
8/1/2016	6_215	2-48	LANTERN PARK DR	23	In Road	Yes	2-48_A.jpg	2-48_B.jpg	2-48_C.jpg		Surface Inspection (SI)	DAGS in out pipe
8/1/2016	6_215	2-49	LANTERN PARK DR	37	In Road	Yes	2-49_A.jpg	2-49_B.jpg	2-49_C.jpg		Surface Inspection (SI)	

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Photo Log**

Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
8/1/2016	6_215	2-50	LANTERN PARK DR	55	In Road	Yes	2-50_A.jpg	2-50_B.jpg	2-50_C.jpg		Surface Inspection (SI)	
8/1/2016	6_215	2-51	LANTERN PARK DR	66	Grass	Yes	2-51_A.jpg	2-51_B.jpg	2-51_C.jpg		Surface Inspection (SI)	
8/1/2016	6_215	2-53	LANTERN PARK DR	85	In Road	Yes	2-53_A.jpg	2-53_B.jpg	2-53_C.jpg		Surface Inspection (SI)	DSGV 5% blockage in trough
8/1/2016	6_215	2-54	LANTERN PARK DR	88	Parking Lot	Yes	2-54_A.jpg	2-54_B.jpg	2-54_C.jpg		Surface Inspection (SI)	
8/1/2016	6_215	2-55	LANTERN PARK DR	124	Parking Lot	Yes	2-55_A.jpg	2-55_B.jpg	2-55_C.jpg		Surface Inspection (SI)	
8/1/2016	6_215	2-56	COACH CIR	138	Driveway	Yes	2-56_A.jpg	2-56_B.jpg	2-56_C.jpg		Surface Inspection (SI)	DRS IN IN PIPE AT 11
8/1/2016	6_215	2-57	COACH CIR	146	Driveway	Yes	2-57_A.jpg	2-57_B.jpg	2-57_C.jpg		Surface Inspection (SI)	
8/4/2016	6_215	2-61	KING ST	0	Wooded / Easement	Yes	2-61_A.jpg	2-61_B.jpg	2-61_C.jpg		Surface Inspection (SI)	
7/28/2016	6_215	2-63	FIELD ST	0	In Road	Yes	2-63_A.jpg	2-63_B.jpg	2-63_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2-64	PARTRIDGETOWN RD	18	In Road	Yes	2-64_A.jpg	2-64_B.jpg	2-64_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2-65	PARTRIDGETOWN RD	48	In Road	Yes	2-65_A.jpg	2-65_B.jpg	2-65_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2-66	PARTRIDGETOWN RD	91	In Road	Yes	2-66_A.jpg	2-66_B.jpg	2-66_C.jpg	2-66_D.jpg	Surface Inspection (SI)	Pavement worn around frame
7/25/2016	6_215	2-67	PARTRIDGETOWN RD	101	In Road	Yes	2-67_A.jpg	2-67_B.jpg	2-67_C.jpg	2-67_D.jpg	Surface Inspection (SI)	MMM in chimney/ minor blockage in out pipe
7/25/2016	6_215	2-68	PARTRIDGETOWN RD	116	In Road	Yes	2-68_A.jpg	2-68_B.jpg	2-68_C.jpg		Surface Inspection (SI)	

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/25/2016	6_215	2-69	PARTRIDGETOWN RD	140	In Road	Yes	2-69_A.jpg	2-69_B.jpg	2-69_C.jpg	2-69_D.jpg	Surface Inspection (SI)	MMM in chimney
7/22/2016	6_215	2-70	TIMOTHY RD	71	In Road	Yes	2-70_A.jpg	2-70_B.jpg	2-70_C.jpg		Surface Inspection (SI)	
7/22/2016	6_215	2-71	FLANDERS RD	27	In Road	Yes	2-71_A.jpg	2-71_B.jpg	2-71_C.jpg		Surface Inspection (SI)	No bench/trough standing water below pipe
8/2/2016	6_215	2-72	STONEBROOK RD	57	Wooded / Easement	Yes	2-72_A.jpg	2-72_B.jpg	2-72_C.jpg		Surface Inspection (SI)	Unable to determine pipe size and material pipes offset from mh
7/28/2016	6_215	2-73	STONEBROOK RD	57	In Road	Yes	2-73_A.jpg	2-73_B.jpg	2-73_C.jpg		Surface Inspection (SI)	Both in pipes offset can't determine pipe material and size
7/28/2016	6_215	2-75	STONEBROOK RD	120	In Road	Yes	2-75_A.jpg	2-75_B.jpg	2-75_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2-77	TIMOTHY RD	151	In Road	Yes	2-77_A.jpg	2-77_B.jpg	2-77_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2-82	WEDGEWOOD DR	334	In Road	Yes	2-82_A.jpg	2-82_B.jpg	2-82_C.jpg		Surface Inspection (SI)	
7/26/2016	6_215	2-84	HERITAGE DR	31	In Road	Yes	2-84_A.jpg	2-84_B.jpg	2-84_C.jpg		Surface Inspection (SI)	
7/26/2016	6_215	2-85	PILGRIM LN	29	In Road	Yes	2-85_A.jpg	2-85_B.jpg	2-85_C.jpg		Surface Inspection (SI)	
7/26/2016	6_215	2-86	PILGRIM LN	31	In Road	Yes	2-86_A.jpg	2-86_B.jpg	2-86_C.jpg		Surface Inspection (SI)	
7/26/2016	6_215	2-87	TANGLEWOOD LN	83	Grass	Yes	2-87_A.jpg	2-87_B.jpg	2-87_C.jpg		Surface Inspection (SI)	
7/26/2016	6_215	2-88	TANGLEWOOD LN	73	In Road	Yes	2-88_A.jpg	2-88_B.jpg	2-88_C.jpg		Surface Inspection (SI)	
7/26/2016	6_215	2-90	TANGLEWOOD LN	20	In Road	Yes	2-90_A.jpg	2-90_B.jpg	2-90_C.jpg	2-90_D.jpg	Surface Inspection (SI)	

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/25/2016	6_215	2-91	WEDGEWOOD DR	290	In Road	Yes	2-91_A.jpg	2-91_B.jpg	2-91_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2-92	WEDGEWOOD DR	279	In Road	Yes	2-92_A.jpg	2-92_B.jpg	2-92_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2-93	WEDGEWOOD DR	245	In Road	Yes	2-93_A.jpg	2-93_B.jpg	2-93_C.jpg		Surface Inspection (SI)	
7/25/2016	6_215	2-94	WEDGEWOOD DR	212	Grass	Yes	2-94_A.jpg	2-94_B.jpg	2-94_C.jpg		Surface Inspection (SI)	
7/27/2016	6_215	6-215	HILLSIDE AVE	55	In Road	Yes	6-215_A.jpg	6-215_B.jpg	6-215_C.jpg		Surface Inspection (SI)	
7/25/2016	6-215	1176	KING ST		In Road	Yes	1176_A.jpg	1176_B.jpg	1176_C.jpg		Surface Inspection (SI)	No GPS Position Recorded
7/28/2016	9_211E	1250	MEADOW ST		Other	No					Not Found (NF)	May Be Paved Over
7/28/2016	9_211E	2302	CHURCH ST		Other	No					Not Found (NF)	
7/28/2016	9_211E	9-213	MEADOW ST		Other	No					Not Found (NF)	May Be Paved Over
7/28/2016	9_211E	9-214	MEADOW ST		Other	No					Not Found (NF)	May Be Paved Over
7/28/2016	9_211E	9-215	MEADOW ST		Other	No					Not Found (NF)	May Be Paved Over
7/27/2016	9_211E	2298	CHURCH ST	234	In Road	Yes	2298_A.jpg	2298_B.jpg	2298_C.jpg		Surface Inspection (SI)	
7/26/2016	9_211E	2299	CHURCH ST	0	In Road	Yes	2299_A.jpg				Surface Inspection (SI)	Lamphole
7/26/2016	9_211E	2299A	CHURCH ST	284	In Road	Yes	2299A_A.jpg				Surface Inspection (SI)	Lamphole

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Date	SubArea	Manhole Number	Location	Nearest House Number	Manhole Location	Manhole Accessible	Area Pic	Manhole Exterior Pic	Manhole Interior Pic	Other Pic	Inspection Type	Comment/Defects
7/26/2016	9_211E	2301	CHURCH ST	215	In Road	Yes	2301_A.jpg	2301_B.jpg	2301_C.jpg		Surface Inspection (SI)	
7/27/2016	9_211E	7-37	CHURCH ST	331	In Road	Yes	7-37_A.jpg	7-37_B.jpg	7-37_C.jpg		Surface Inspection (SI)	Can't determine pipe material
7/26/2016	9_211E	9-211	CHURCH ST	136	In Road	Yes	9-211_A.jpg	9-211_B.jpg	9-211_C.jpg		Surface Inspection (SI)	
7/26/2016	9_211E	9-211C	CHURCH ST	90	In Road	Yes	9-211C_A.jpg	9-211C_B.jpg	9-211C_C.jpg		Surface Inspection (SI)	
7/26/2016	9_211E	9-211D	CHURCH ST	87	In Road	Yes	9-211D_A.jpg	9-211D_B.jpg	9-211D_C.jpg		Surface Inspection (SI)	
7/26/2016	9_211E	9-211E	CHURCH ST	8	In Road	Yes	9-211E_A.jpg	9-211E_B.jpg	9-211E_C.jpg		Surface Inspection (SI)	
7/26/2016	9_211E	9-212	PARK PL	22	In Road	Yes	9-212_A.jpg	9-212_B.jpg	9-212_C.jpg	9-212_D.jpg	Surface Inspection (SI)	
7/26/2016	9_211E	9-216	CHURCH ST	191	In Road	Yes	9-216_A.jpg				Surface Inspection (SI)	Lamphole
7/26/2016	9_211E	9-21E	CHURCH ST	8	In Road	Yes	9-21E_A.jpg	9-21E_B.jpg	9-21E_C.jpg		Surface Inspection (SI)	
7/27/2016	9_211E	990	CHURCH ST	297	In Road	Yes	990_A.jpg	990_B.jpg			Surface Inspection (SI)	Lamphole



2-1_A



2-1_B



2-1_C



2-2_A



2-2_B



2-2_C



2-3_A



2-3_B



2-3_C



2-4_A



2-4_B



2-4_C



2-5_A



2-5_B



2-5_C



2-6_A



2-6_B



2-6_C



2-7_A



2-7_B



2-7_C



2-8_A



2-8_B



2-8_C



2-10_A



2-10_B



2-10_C



2-11_A



2-11_B



2-11_C



2-12_A



2-12_B



2-12_C



2-14_A



2-14_B



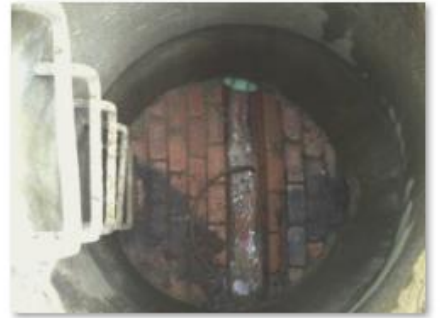
2-14_C



2-15_A



2-15_B



2-15_C



2-15_D



2-16_A



2-16_B



2-16_C



2-16A_A



2-16A_B



2-16A_C



2-16B_A



2-16B_B



2-16B_C



2-16C_A



2-16C_B



2-16C_C



2-17_A



2-17_B



2-17_C



2-21_A



2-22_A



2-22_B



2-22_C



2-23_A



2-23_B



2-23_C



2-25_A



2-34_1_A



2-34_A



2-34_B



2-34_C



2-35_A



2-35_B



2-35_C



2-36_A



2-36_B



2-36_C



2-36_D



2-37_A



2-37_B



2-37_C



2-40_A



2-40_B



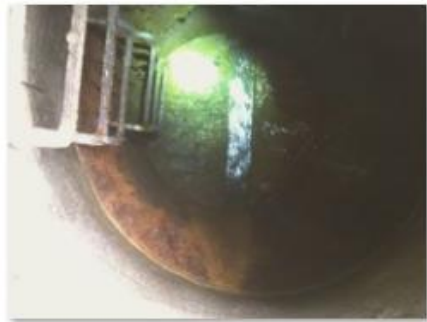
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2-41_A



2-41_B



2-41_C



2-41_D



2-42_A



2-42_B



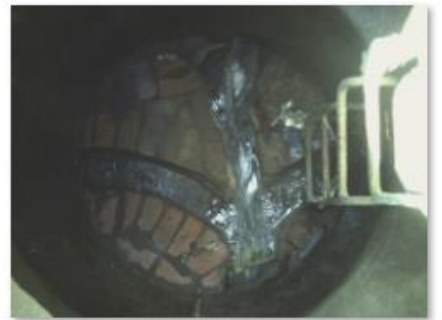
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2-43_A



2-43_B



2-43_C



2-45_A



2-45_B



2-45_C



2-46_A



2-46_B



2-46_C



2-47_A



2-47_B



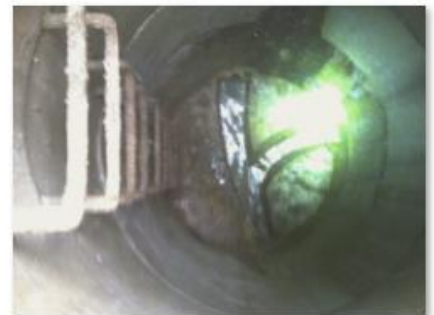
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2-48_A



2-48_B



2-48_C



2-49_A



2-49_B



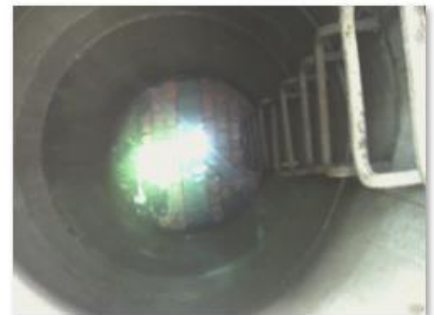
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2-50_A



2-50_B



2-50_C



2-51_A



2-51_B



2-51_C



2-52_A



2-53_A



2-53_B



2-53_C



2-54_A



2-54_B



2-54_C



2-55_A



2-55_B



2-55_C



2-56_A



2-56_B



2-56_C



2-57_A



2-57_B



2-57_C



2-61_A



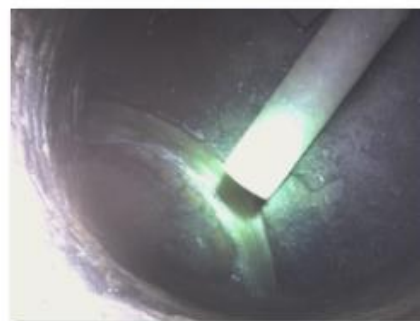
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2-61_C



2-63_A



2-63_B



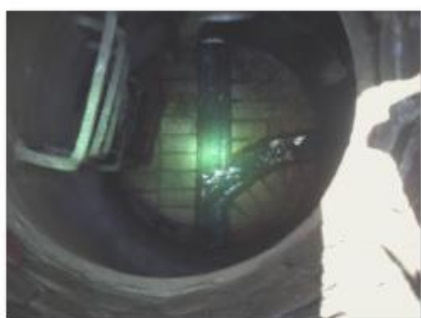
2-63_C



2-64_A



2-64_B



2-64_C



2-65_A



2-65_B



2-65_C



2-66_A



2-66_B



2-66_C



2-66_D



2-67_A



2-67_B



2-67_C



2-67_D



2-68_A



2-68_B



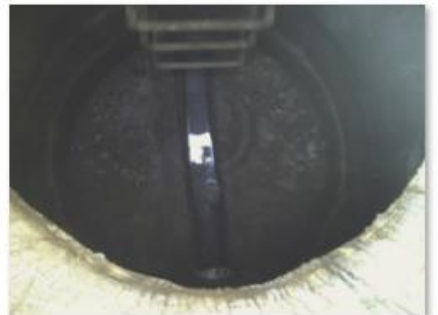
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2-69_A



2-69_B



2-69_C



2-69_D



2-70_A



2-70_B



2-70_C



2-71_A



2-71_B



2-71_C



2-72_A



2-72_B



2-72_C



2-73_A



2-73_B



2-73_C



2-75_A



2-75_B



2-75_C



2-76_A



2-77_A



2-77_B



2-77_C



2-78_A



2-81_A



2-81_B



2-81_C



2-82_A



2-82_B



2-82_C



2-84_A



2-84_B



2-84_C



2-85_A



2-85_B



2-85_C



2-86_A



2-86_B



2-86_C



2-87_A



2-87_B



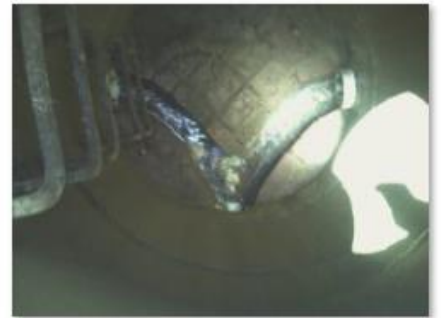
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2-88_A



2-88_B



2-88_C



2-89_A



2-90_A



2-90_B



2-90_C



2-90_D



2-91_A



2-91_B



2-91_C



2-92_A



2-92_B



2-92_C



2-93_A



2-93_B



2-93_C



2-94_A



2-94_B



2-94_C



6-1_A



6-11_B



6-11_C



6-11a_A



6-12_A



6-12_B



6-12_C



6-13_A



6-13_B



6-13_C



6-14_A



6-14_B



6-14_C



6-15_A



6-15_B



6-15_C



6-16_A



6-16_B



6-16_C



6-16_D



6-17_A



6-17_B



6-17_C



6-18_A



6-19_A



6-19_B



6-19_C



6-19_D



6-20_A



6-20_B



6-20_C



6-20_D



6-21_A



6-21_B



6-21_C



6-23_A



6-23_B



6-23_C



6-24_A



6-192_A



6-193_A



6-193_B



6-193_C



6-194_A



6-194_B



6-194_C



6-195_A



6-195_B



6-195_C



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6-197_C



6-215_A



6-215_B



6-215_C



7-1_A



7-1_B



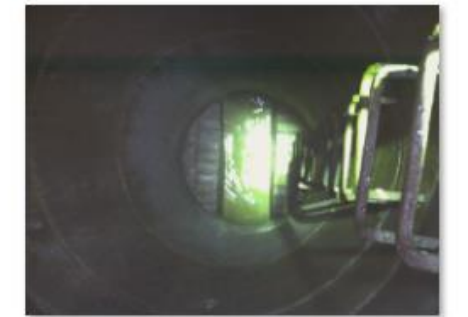
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7-1A_A



7-1A_B



7-1A_C



7-2_A



7-2_B



7-2_C



7-3_A



7-4_A



7-4_B



7-4_C



7-10_A



7-11_A



7-12_A



7-12_B



7-12_C



7-13_A



7-13_B



7-13_C



7-30_A



7-37_A



7-37_B



7-37_C



7-38_A



7-38_B



7-38_C



9-1_A



9-1_B



9-1_C



9-2_A



9-2_B



9-2_C



9-2A_A



9-2A_B



9-2A_C



9-211_A



9-211_B



9-211_C



9-211C_A



9-211C_B



9-211C_C



9-211D_A



9-211D_B



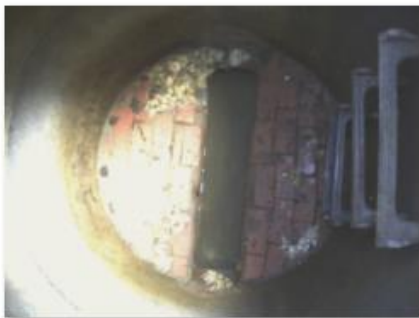
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9-212_A



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9-212_C



9-212_D



9-216_A



10-198_A



10-198_B



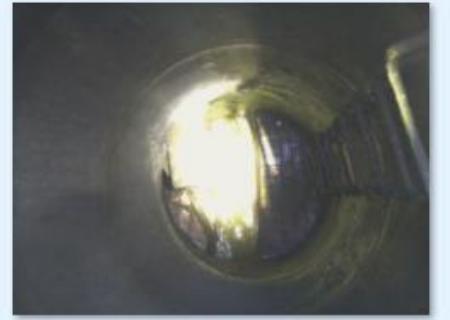
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10-202_B



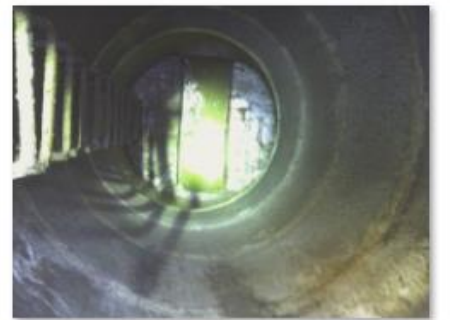
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10-202A_C



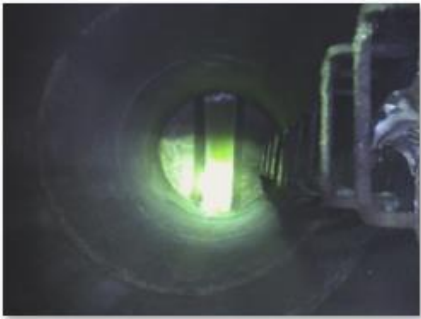
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10-204_B



10-204_C



10-204_D



10-207_A



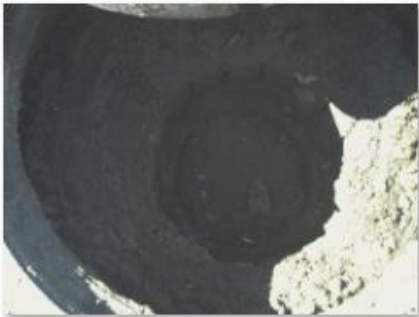
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10-207_C



990_A



990_B



1094_A



1094_B



1094_C



1094_D



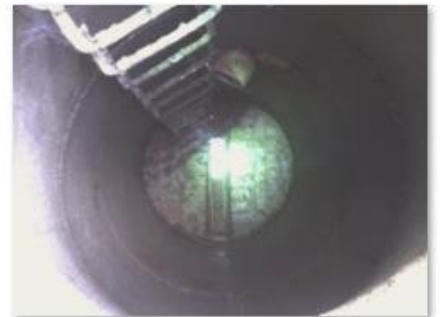
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1097_A



1097_B



1097_C



1099_A



1099_B



1099_C



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1102_B



1102_C



1104_A



1104_B



1104_C



1105_A



1105_B



1105_C



1105_D



1105A_A



1105A_B



1105A_C



1129_A



1129_B



1129_C



1132_1_A



1132_1_B



1132_1_C



1132_2_A



1132_A



1132_B



1132_C



1165_A



1166_A



1166_B



1166_C



1167_A



1167_B



1167_C



1169_A



1169_B



1169_C



1172_A



1172_B



1172_C



1174_A



1176_A



1176_B



1176_C



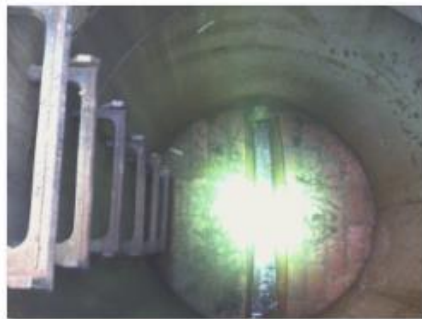
1176_D



1178_A



1178_B



1178_C



1179_A



1179_B



1179_C



2298_A



2298_B



2298_C



2299_A



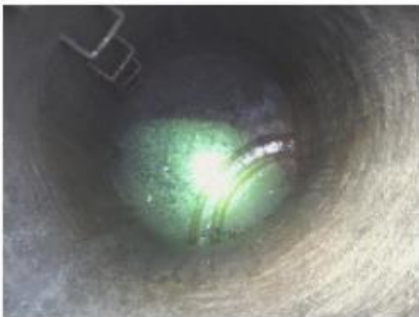
2299A_A



2301_A



2301_B



2301_C



2335_A



2335_B



2335_C



2336_A



2337_A



2337_B



2337_C



2339_A



2339_B



2339_C



2340_A



2340_B



2340_C



2341_A



2341_B



2341_C



2342_A



2342_B



2342_C



2364_A



2365_A



2365_B



2365_C



2429_A



2429_B



2429_C



2429a_A



2429a_B



2429a_C



2479_A



2479_B



2479_C



2480_A



2480_B



2480_C

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APPENDIX C - SMOKE/DYE FLOOD
TESTING RESULTS

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Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Autumn Ridge Road and Crestwood Drive

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/03/2015

Inspector: RV/RM

Findings:

Light smoke from catch basin - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15-110

SUBAREA: 7-93

SKETCH # 2

DATE: 12-3-15

INSPECTOR: RM

LEGEND					
NOT TO SCALE					
Sanitary-	○	Storm-	○	Catch Basin-	■
Finding-	⚡	Hydrant-	⊕		

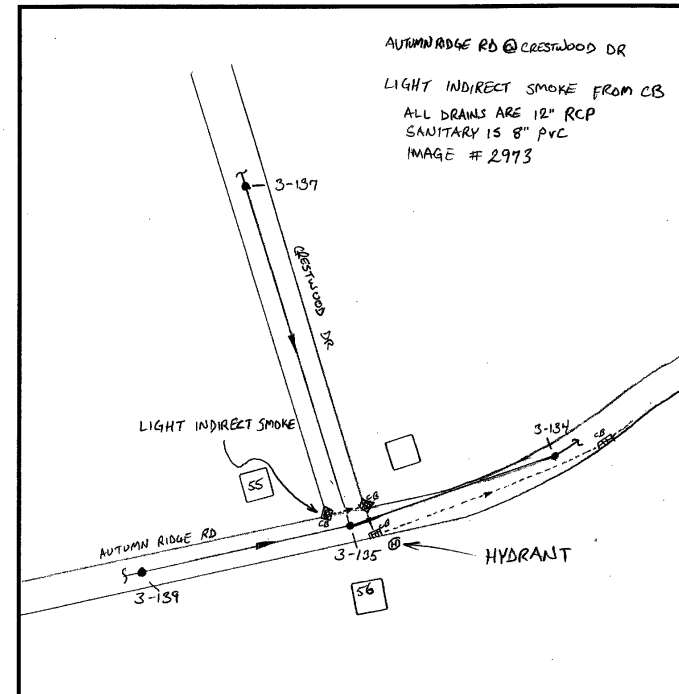


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Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 2.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

8 Carolyn Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from rear left roof leader - direct connection

Drainage Area SqFt	Runoff Coeff
280	0.9



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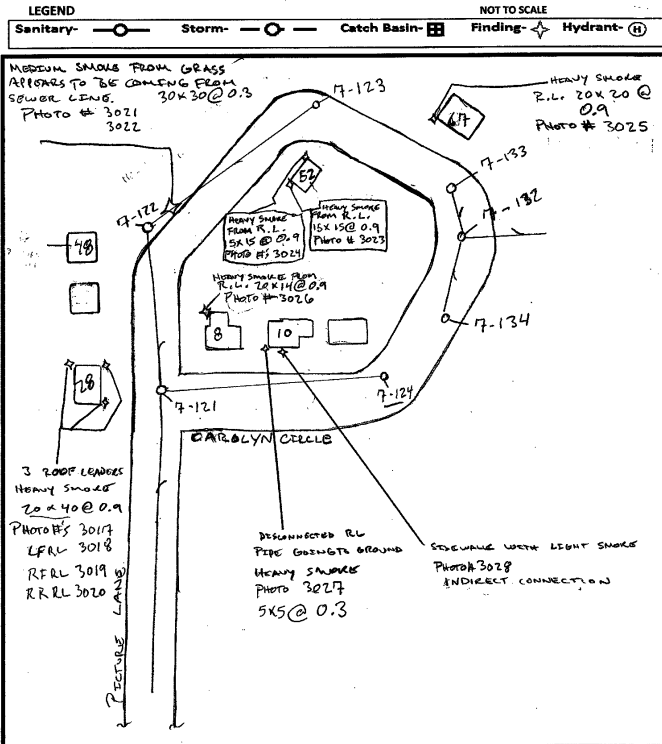
SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93

SKETCH # 8

DATE: 12-9-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

10 Carolyn Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from disconnected roof leader with pipe entering ground - direct connection

Drainage Area SqFt	Runoff Coeff
25	0.3



FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93

SKETCH # 8

DATE: 12-9-15 INSPECTOR: RV

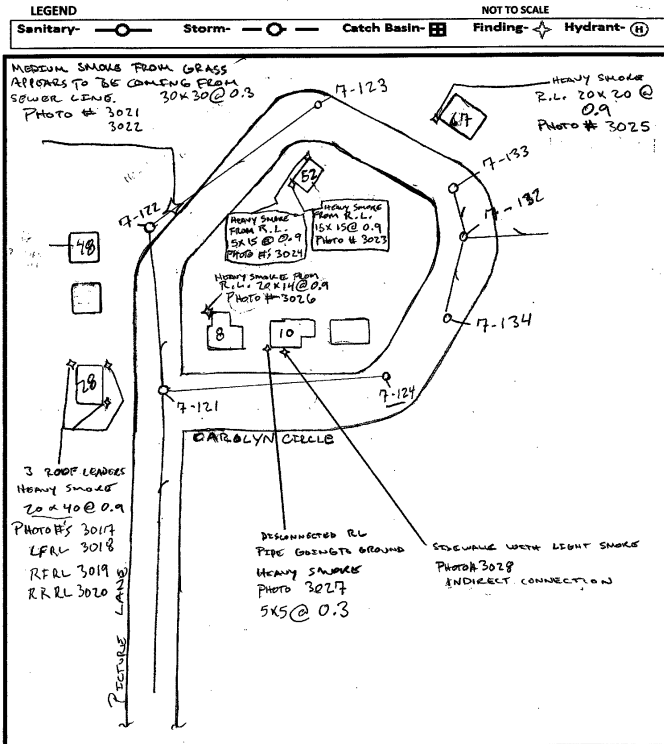


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Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

10 Carolyn Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Light smoke from sidewalk - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0

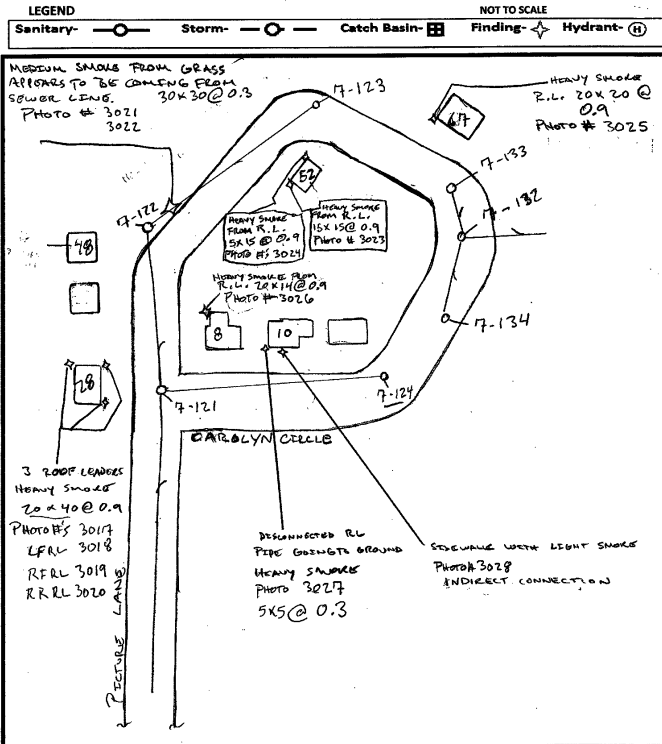


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SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 8
 DATE: 12-9-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

52 Carolyn Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from front left roof leader - direct connection

Drainage Area SqFt	Runoff Coeff
225	0.9



FLOWAssessment
SERVICES LLC.

SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93

SKETCH # 8

DATE: 12-9-15 INSPECTOR: RV

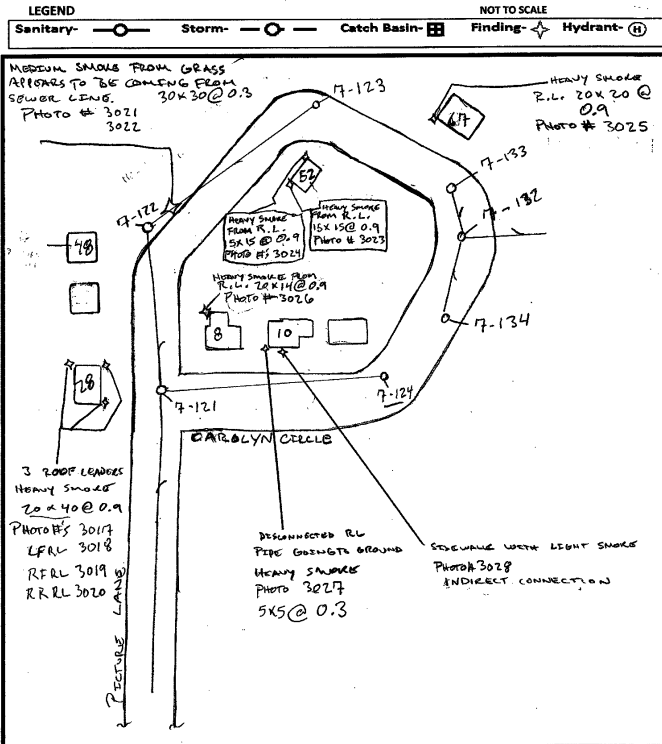


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Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

52 Carolyn Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from front right roof leader - direct connection

Drainage Area SqFt	Runoff Coeff
225	0.9



FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93

SKETCH # 8

DATE: 12-9-15 INSPECTOR: RV

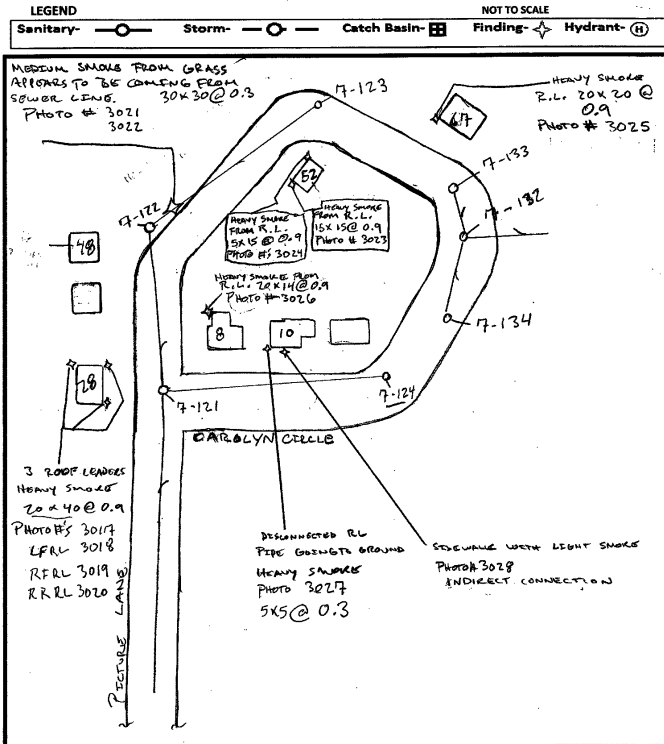


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Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

67 Carolyn Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from front left roof leader - direct connection

Drainage Area SqFt	Runoff Coeff
200	0.9



Image #: DSCN3025.JPG

FLOW Assessment SERVICES L.L.C.

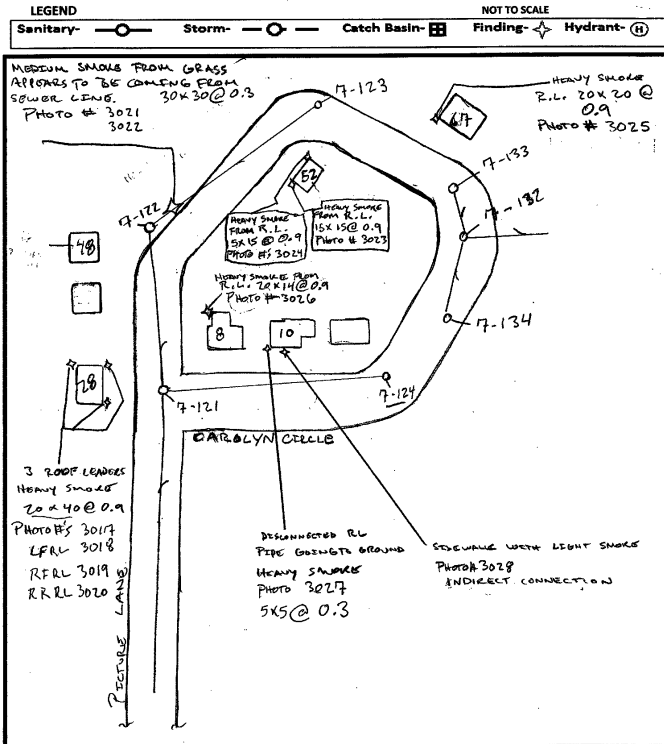
SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93

SKETCH # 8

DATE: 12-9-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

117 Cold Spring Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from 8" VCP pipe in catch basin - direct connection

Drainage Area SqFt	Runoff Coeff
150	0.9



FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93 SKETCH # 5

DATE: 12-9-15 INSPECTOR: RV

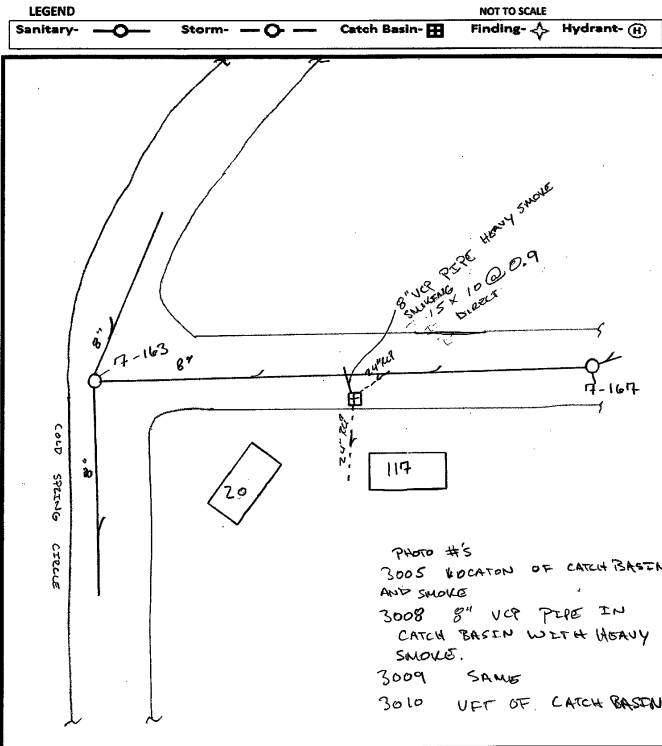


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Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

117 Cold Spring Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from 8" VCP pipe in catch basin - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 5
 DATE: 12-9-15 INSPECTOR: RV

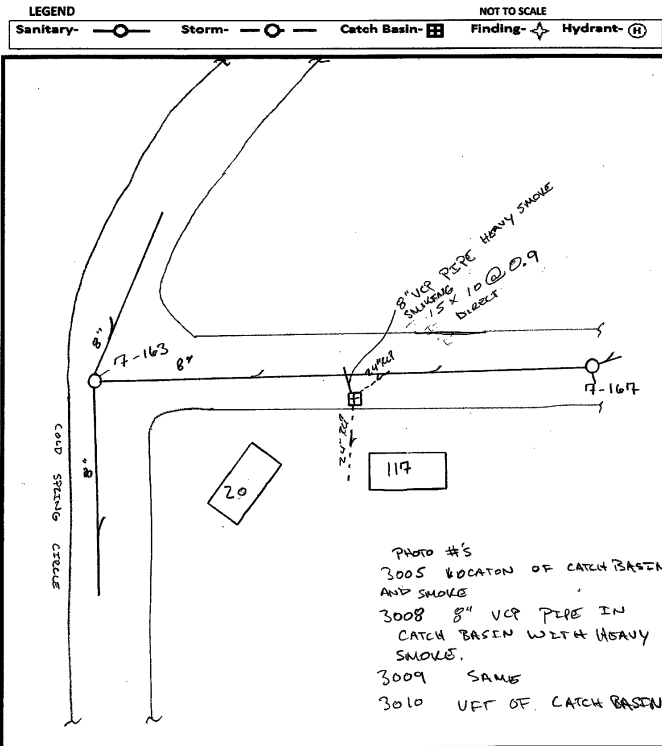


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Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 5.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

117 Cold Spring Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from 8" VCP pipe in catch basin - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93 SKETCH # 5

DATE: 12-9-15 INSPECTOR: RV

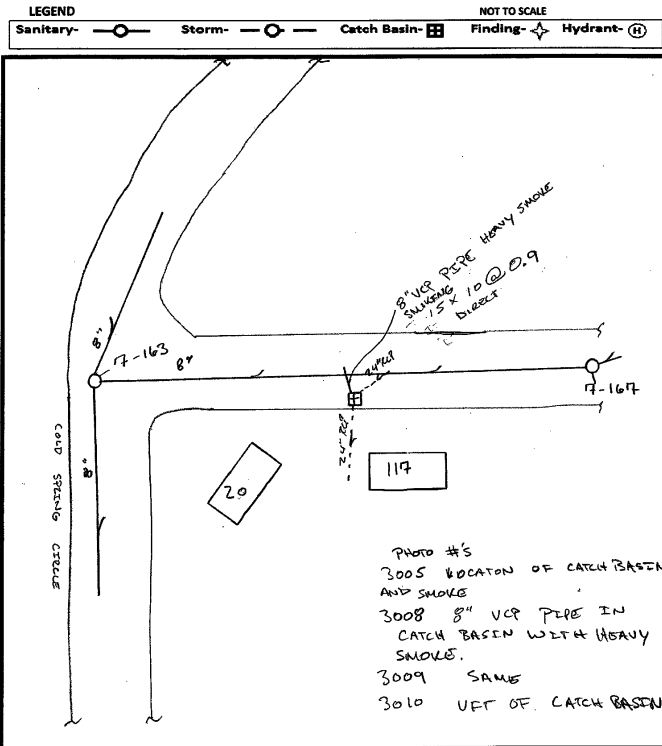


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Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

117 Cold Spring Circle

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from 8" VCP pipe in catch basin - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93 SKETCH # 5

DATE: 12-9-15 INSPECTOR: RV

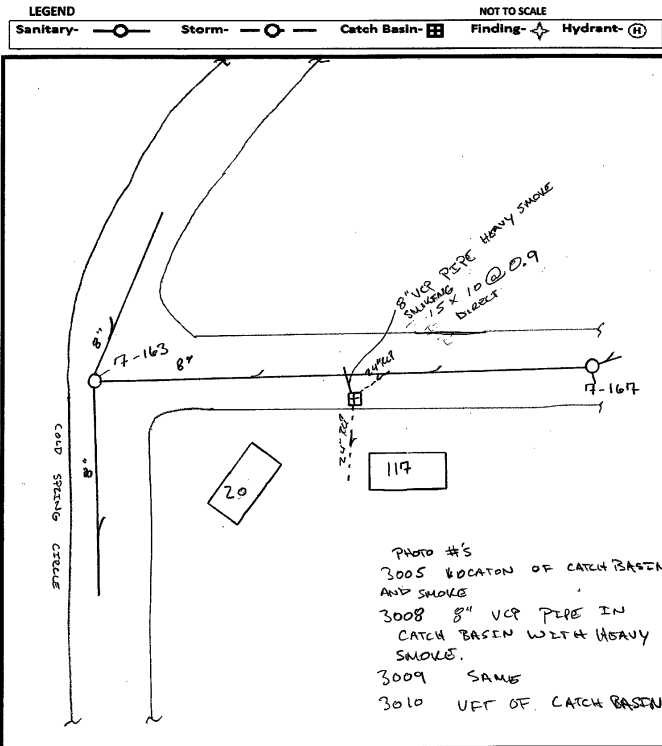


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Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 5.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Eagle Street

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/11/2015

Inspector: RV/RM

Findings:

MH 7-252 is in gutter line and has two 0.5" holes in cover - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3040.JPG



SMOKE TEST FINDING

JOB: Naugatuck Ct

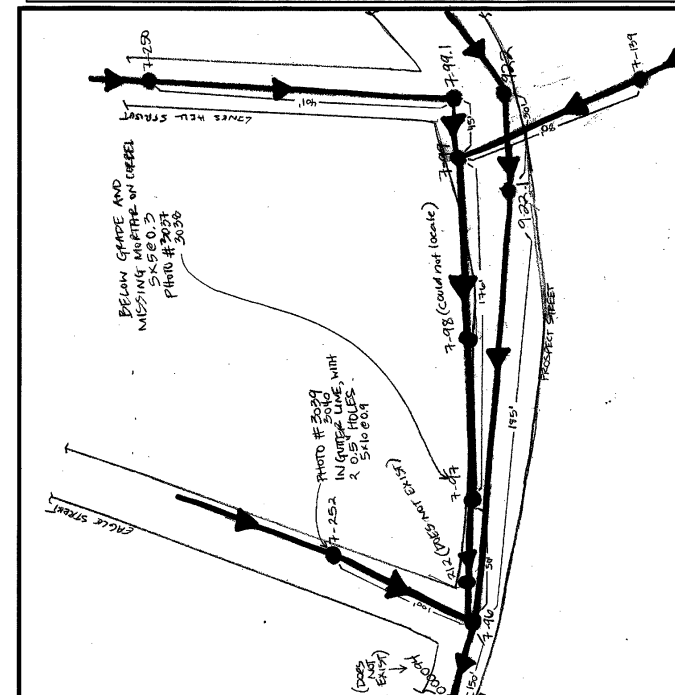
SUBAREA: 7_93

SKETCH # 9

DATE: 12-11-15

INSPECTOR: RV

LEGEND				
NOT TO SCALE				
Sanitary	Storm	Catch Basin	Finding	Hydrant



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 9.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Eagle Street

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/11/2015

Inspector: RV/RM

Findings:

MH 7-252 is in gutter line and has two 0.5" holes in cover - direct connection

Drainage Area SqFt	Runoff Coeff
50	0.9



Image #: DSCN3039.JPG



SMOKE TEST FINDING

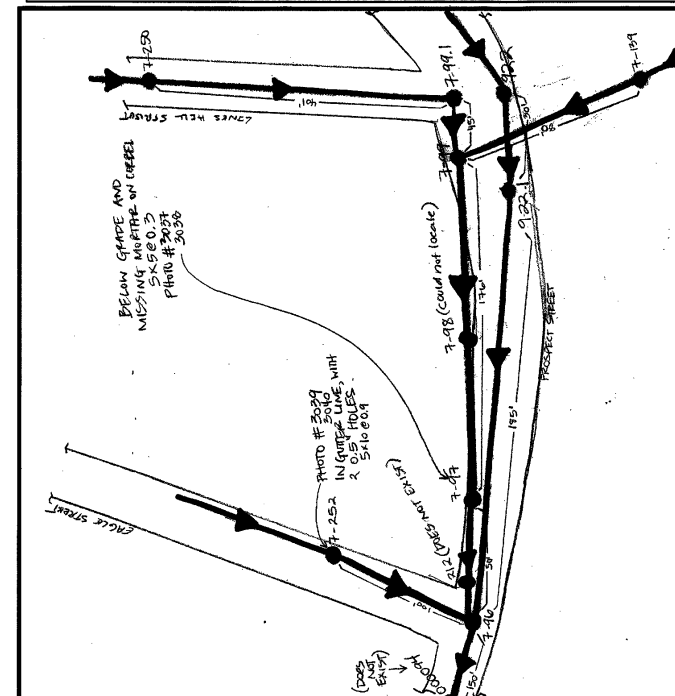
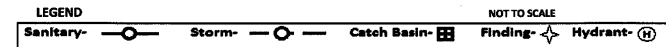
JOB: Naugatuck Ct

SUBAREA: 7_93

SKETCH # 9

DATE: 12-11-15

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 9.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

East Waterbury Road Easement

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/04/2015

Inspector: RV/RM

Findings:

MH 4-108 was buried 1' but is now uncovered, downhill water collects on top of manhole which has two 0.5" holes in cover

Drainage
Area SqFt

Runoff
Coeff



Image #: DSCN2977.jpg

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

26 Locust Street

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from left front roof leader - direct connection

Drainage
Area SqFt

0

Runoff
Coeff

0



Image #: DSCN3016.JPG

FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110

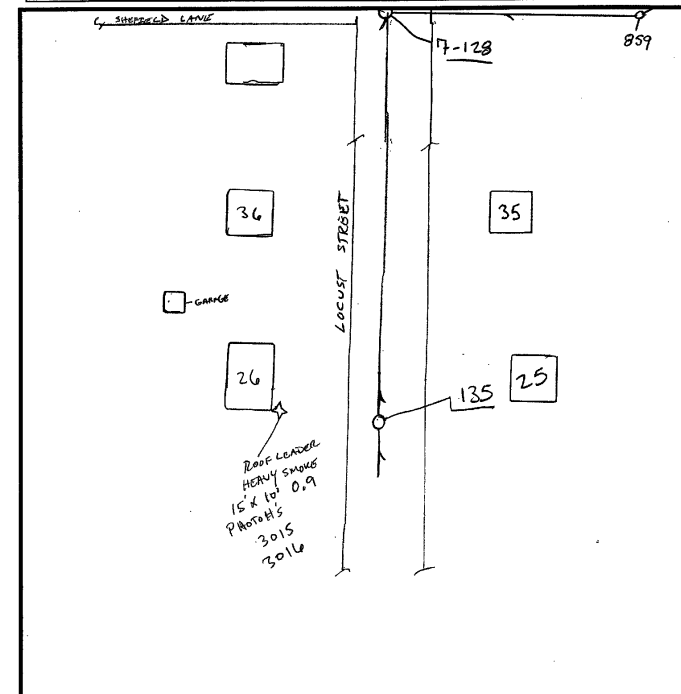
SUBAREA: 7_93

SKETCH # 7

DATE: 12-9-15 INSPECTOR: RV

LEGEND
Sanitary - Storm - Catch Basin - Finding - Hydrant -

NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 7.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

26 Locust Street

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from left front roof leader - direct connection

Drainage Area SqFt	Runoff Coeff
150	0.9



FLOW Assessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93

SKETCH # 7

DATE: 12-9-15 INSPECTOR: RV

LEGEND
Sanitary - Storm - Catch Basin - Finding - Hydrant -

NOT TO SCALE

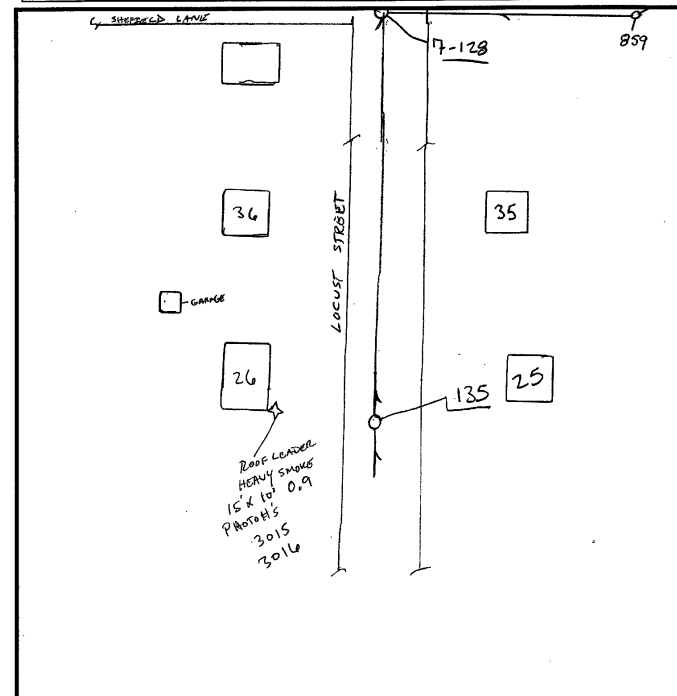


Image #: DSCN3015.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 7.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

147 Miller Drive

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from driveway drain with 4" roof leader tied into driveway drain - direct connection

Drainage Area SqFt	Runoff Coeff
2553	0.9



SMOKE TEST FINDING

JOB: 15110

SUBAREA: 7_93

SKETCH # 4

DATE: 12-9-15

INSPECTOR: RV

LEGEND

NOT TO SCALE	
Sanitary	○
Storm	○
Catch Basin	⊠
Finding	✦
Hydrant	⊕

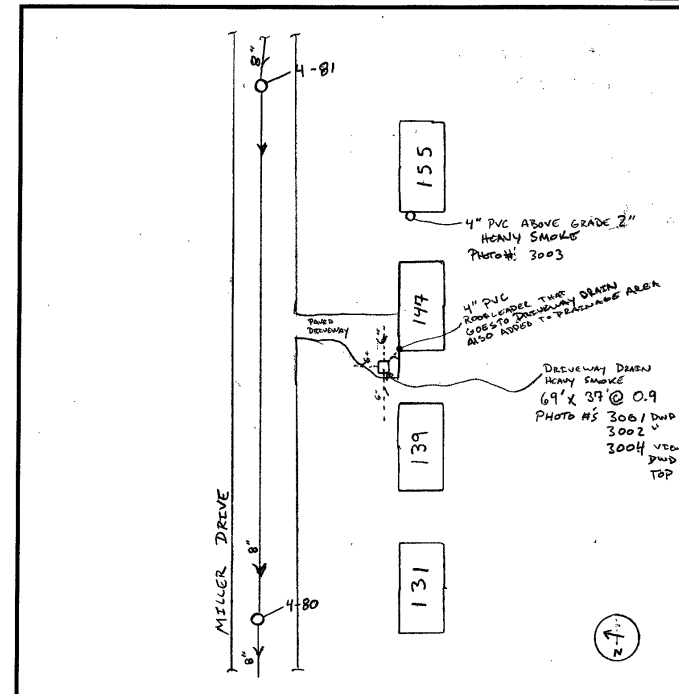


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Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 4.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 147 Miller Drive

Sub-System: 7_93

Smoke Testing Log

Project No: 15110
 Date: 12/09/2015
 Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Heavy smoke from driveway drain with 4" roof leader tied into driveway drain - direct connection	0	0



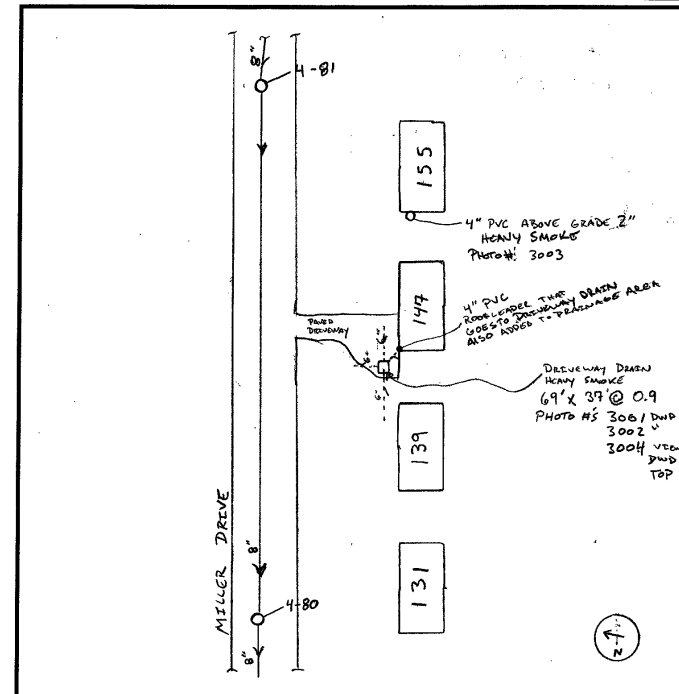
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SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 4
 DATE: 12-9-15 INSPECTOR: RV

LEGEND
 Sanitary- ○ Storm- ○ Catch Basin- □ Finding- ✦ Hydrant- ⊕
 NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 4.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

147 Miller Drive

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from driveway drain with 4" roof leader tied into driveway drain - direct connection

Drainage Area SqFt

0

Runoff Coeff

0



Image #: DSCN3004.JPG

FLOW Assessment SERVICES L.L.C.

SMOKE TEST FINDING

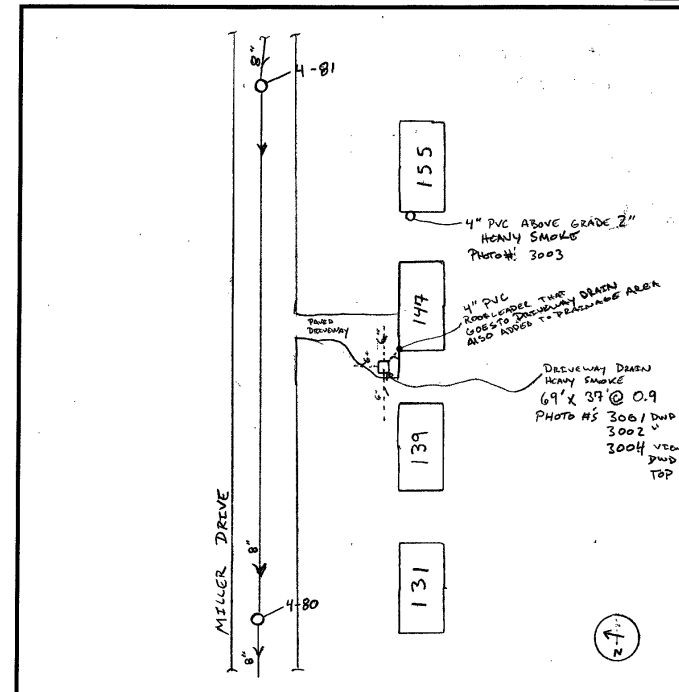
JOB: 15110

SUBAREA: 7_93

SKETCH # 4

DATE: 12-9-15 INSPECTOR: RV

LEGEND
 Sanitary - ○ Storm - ○ Catch Basin - □ Finding - ✦ Hydrant - ⊕
 NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 4.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

155 Miller Drive

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from 4" PVC pipe, 2" above grade - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3003.JPG



SMOKE TEST FINDING

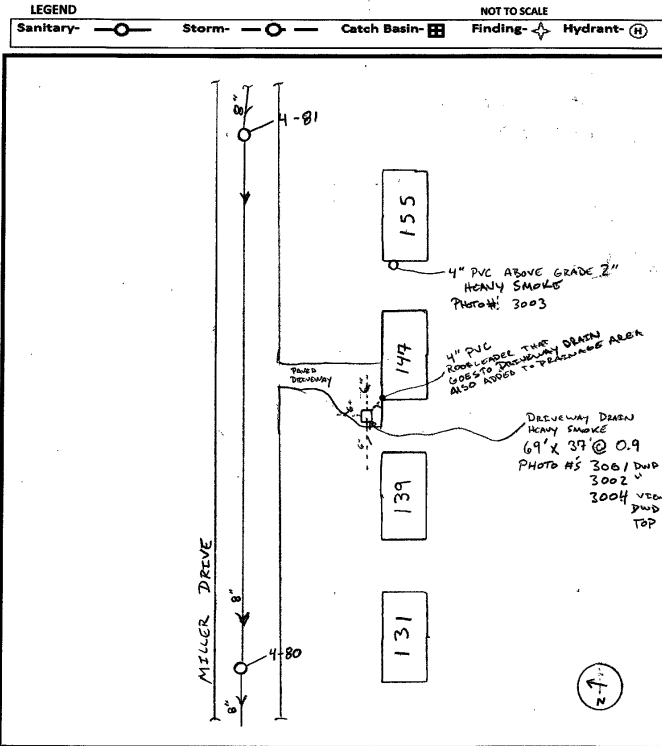
JOB: 15110

SUBAREA: 7_93

SKETCH # 4

DATE: 12-9-15

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 4.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Picture Lane

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

MH 7-108.1 is 2" below grade with 27 0.5" holes in cover

Drainage Area SqFt	Runoff Coeff
25	0.9



Image #: DSCN3034.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 28 Picture Lane

Sub-System: 7_93

Smoke Testing Log

Project No: 15110
 Date: 12/09/2015
 Inspector: RV/RM

Findings:

Heavy smoke from three roof leaders - direct connection

Drainage Area SqFt	Runoff Coeff
800	0.9

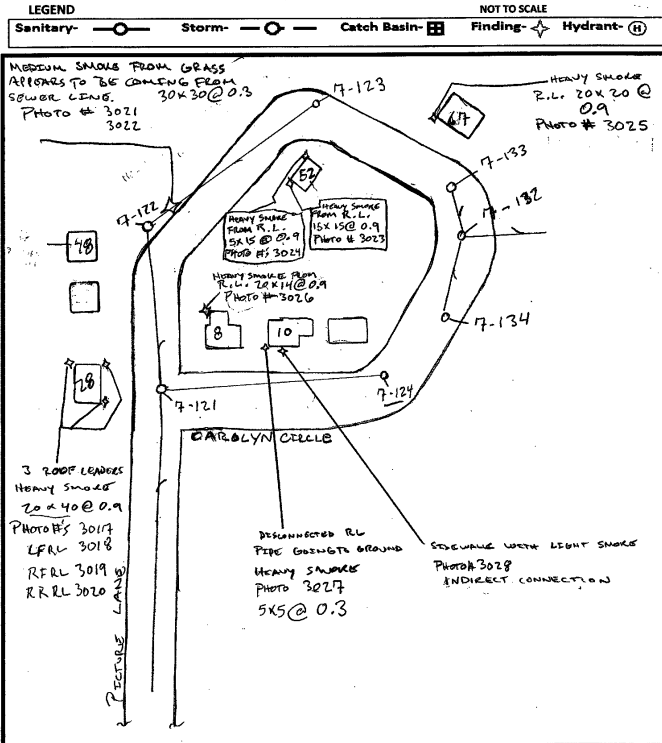


Image #: DSCN3017.JPG



SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 8
 DATE: 12-9-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

28 Picture Lane

Smoke Testing Log

Sub-System: 7_93

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from three roof leaders - direct connection

Drainage Area SqFt	Runoff Coeff
0	0

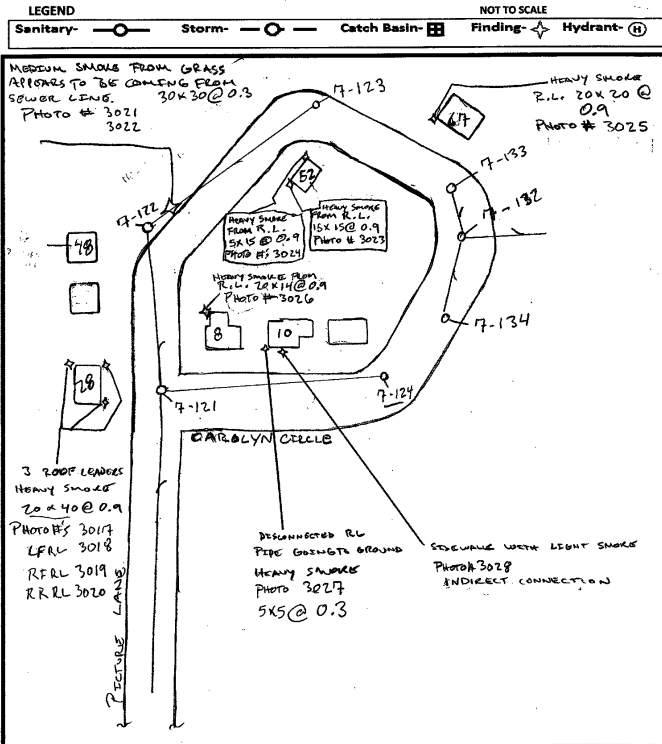


Image #: DSCN3018.JPG



SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 8
 DATE: 12-9-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

28 Picture Lane

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Heavy smoke from three roof leaders - direct connection

Drainage Area SqFt	Runoff Coeff
0	0

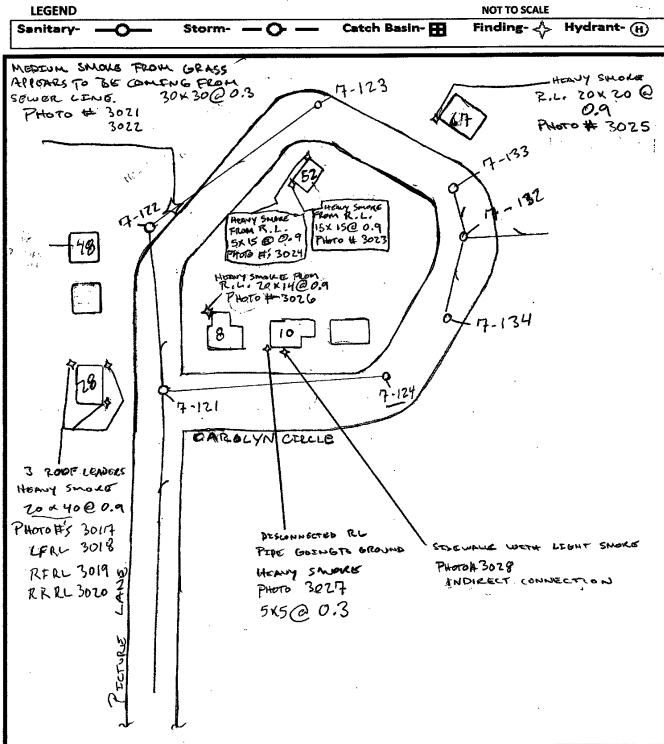


Image #: DSCN3019.JPG

FLOW Assessment SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 8
 DATE: 12-9-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 28 Picture Lane

Sub-System: 7_93

Smoke Testing Log

Project No: 15110
 Date: 12/09/2015
 Inspector: RV/RM

Findings:

Heavy smoke from three roof leaders - direct connection

Drainage Area SqFt	Runoff Coeff
0	0

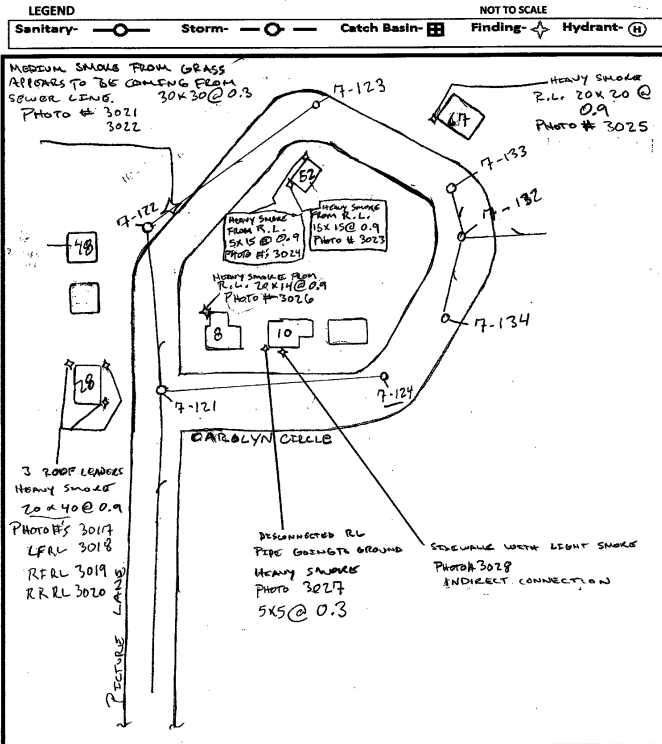


Image #: DSCN3020.JPG



SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 8
 DATE: 12-9-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

48 Picture Lane

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:

Medium smoke coming from ground right above sewer line

Drainage Area SqFt	Runoff Coeff
0	0

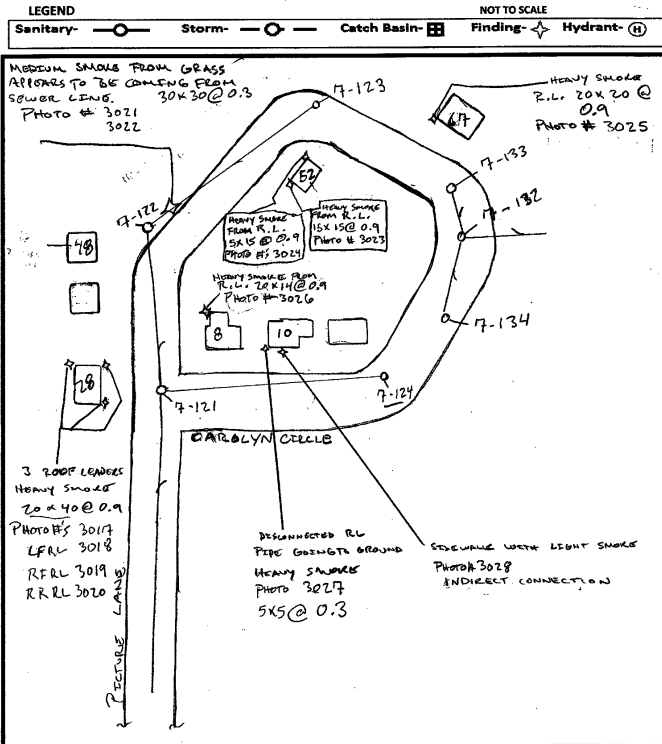


Image #: DSCN3022.JPG

FLOW Assessment SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 8
 DATE: 12-9-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 48 Picture Lane

Sub-System: 7_93

Smoke Testing Log

Project No: 15110
 Date: 12/09/2015
 Inspector: RV/RM

Findings:

Medium smoke coming from ground right above sewer line

Drainage Area SqFt	Runoff Coeff
900	0.3



FLOW Assessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 8
 DATE: 12-9-15 INSPECTOR: RV

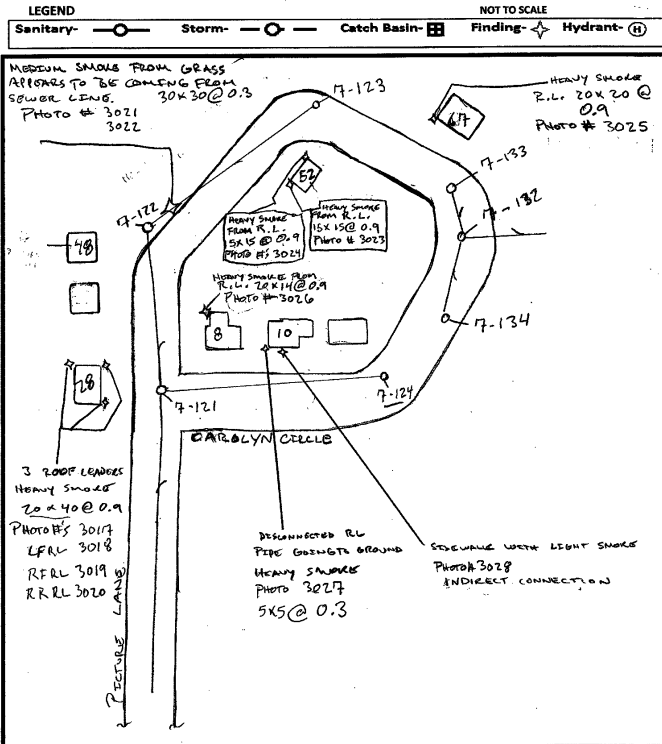


Image #: DSCN3021.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 8.tif

Flow Assessment Services, L.L.C.

Smoke Testing Log

Municipality: Naugatuck, CT

Sub-System: 7_93

Project No: 15110

Finding Location:

Date: 12/11/2015

Prospect Street

Inspector: RV/RM

Findings:

Map correction

Drainage Area SqFt	Runoff Coeff
0	0



SMOKE TEST FINDING

JOB: Naugatuck Ct

SUBAREA: 7_93

SKETCH # 9

DATE: 12-11-15

INSPECTOR: EV

LEGEND		NOT TO SCALE	
Sanitary	—○—	Storm	—○—
Catch Basin	—■—	Finding	—◆—
		Hydrant	—(H)—

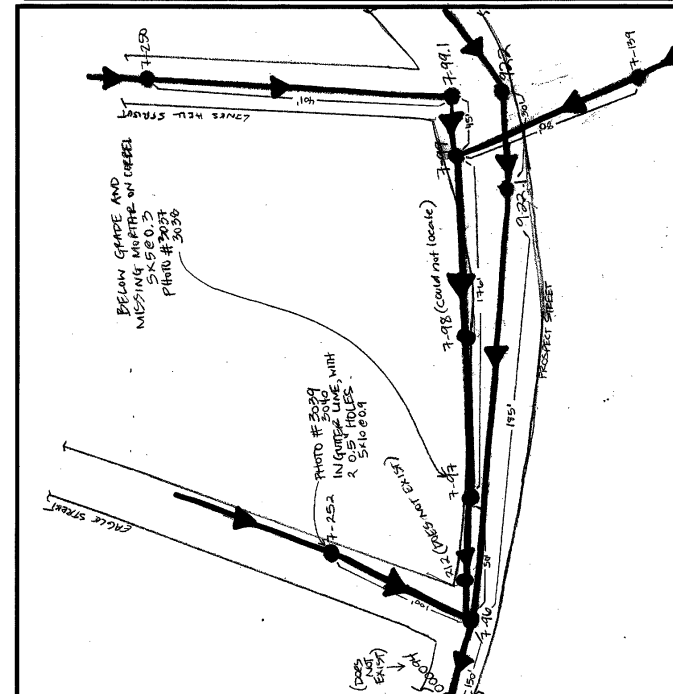


Image #:

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 9.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Prospect Street

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/10/2015

Inspector: RV/RM

Findings:

MH 7-103 is 1" below grade and has two 0.5" holes in cover - direct connection

Drainage
Area SqFt

Runoff
Coeff



Image #: DSCN3036.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
Finding Location:
Prospect Street

Sub-System: 7_93

Smoke Testing Log

Project No: 15110
Date: 12/11/2015
Inspector: RV/RM

Findings:

MH 7-97 is below grade 1" and is missing mortar in corbel - direct connection

Drainage Area SqFt	Runoff Coeff
25	0.3

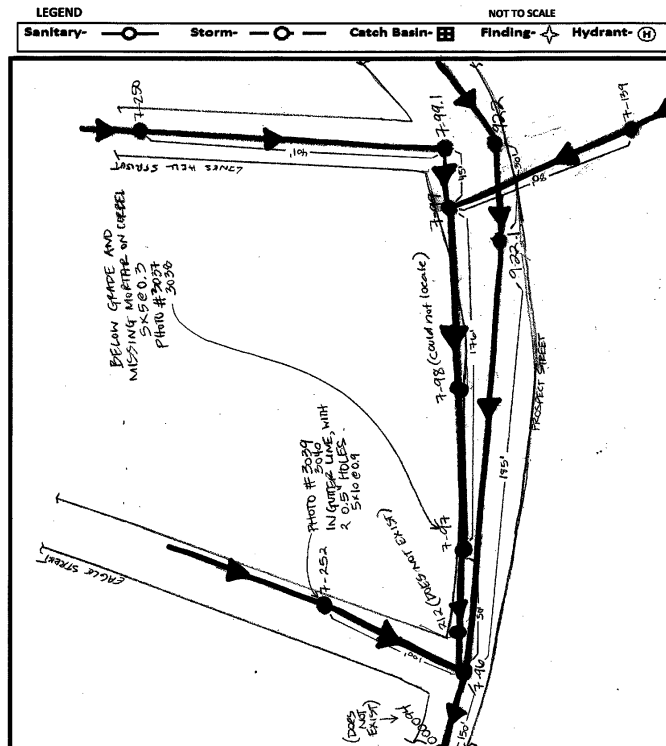


Image #: DSCN3037.JPG



SMOKE TEST FINDING

JOB: Naugatuck Ct
SUBAREA: 7_93 SKETCH # 9
DATE: 12-11-15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 9.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Prospect Street

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/11/2015

Inspector: RV/RM

Findings:

MH 7-97 is below grade 1" and is missing mortar in corbel - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3038.JPG



SMOKE TEST FINDING

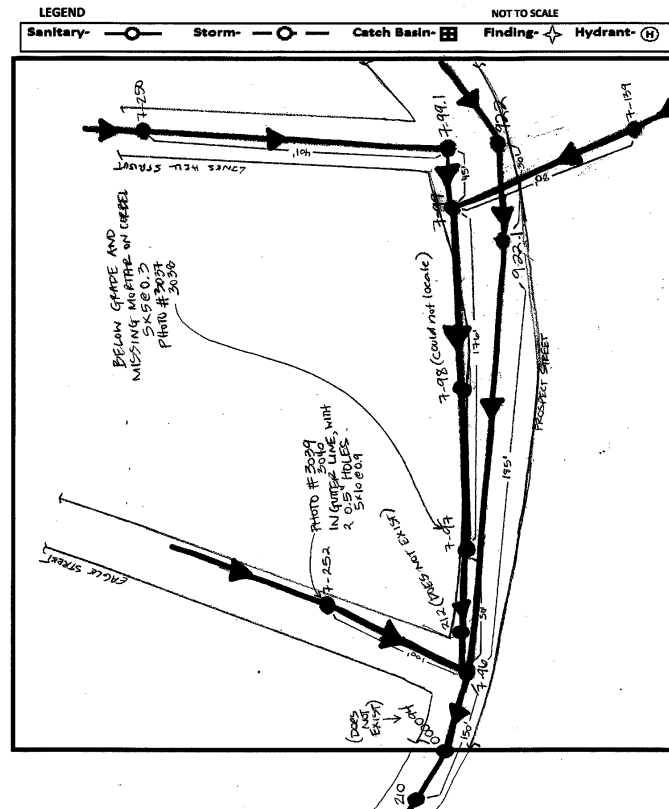
JOB: Naugatuck Ct

SUBAREA: 7_93

SKETCH # 9

DATE: 12-11-15

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 9.tif

Flow Assessment Services, L.L.C.

Smoke Testing Log

Municipality: Naugatuck, CT

Sub-System: 7_93

Project No: 15110

Finding Location:

Date: 12/11/2015

Prospect Street

Inspector: RV/RM

Findings:

Map correction

Drainage Area SqFt

0

Runoff Coeff

0



SMOKE TEST FINDING

JOB: Naugatuck Ct

SUBAREA: 7_93

SKETCH # 9

DATE: 12-11-15

INSPECTOR: EV

LEGEND NOT TO SCALE
 Sanitary- Storm- Catch Basin- Finding- Hydrant-

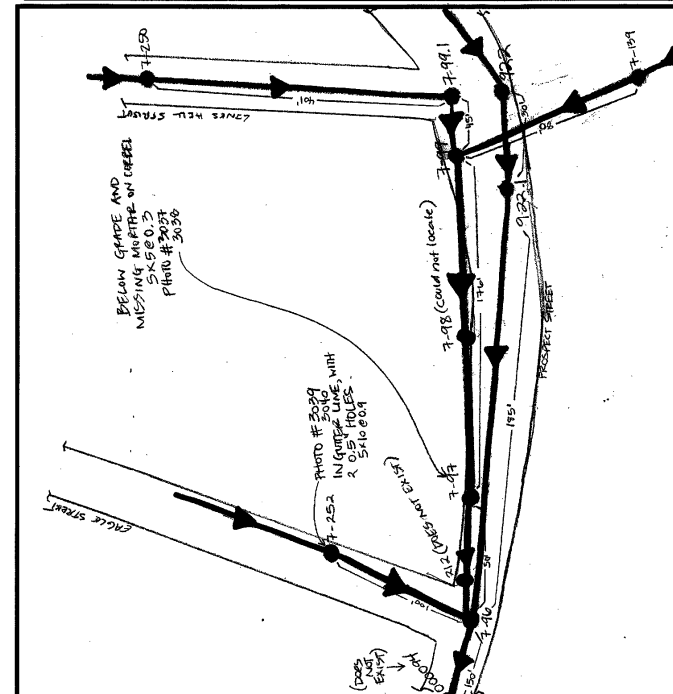


Image #:

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 9.tif

Flow Assessment Services, L.L.C.

Smoke Testing Log

Municipality: Naugatuck, CT

Sub-System: 7_93

Project No: 15110

Finding Location:

Date: 12/11/2015

Prospect Street

Inspector: RV/RM

Findings:

Map correction

Drainage Area SqFt	Runoff Coeff
0	0



SMOKE TEST FINDING

JOB: Naugatuck Ct

SUBAREA: 7_93

SKETCH # 9

DATE: 12-11-15

INSPECTOR: EV

LEGEND		NOT TO SCALE	
Sanitary	—○—	Storm	—○—
Catch Basin	—■—	Finding	—◆—
Hydrant	—(H)—		

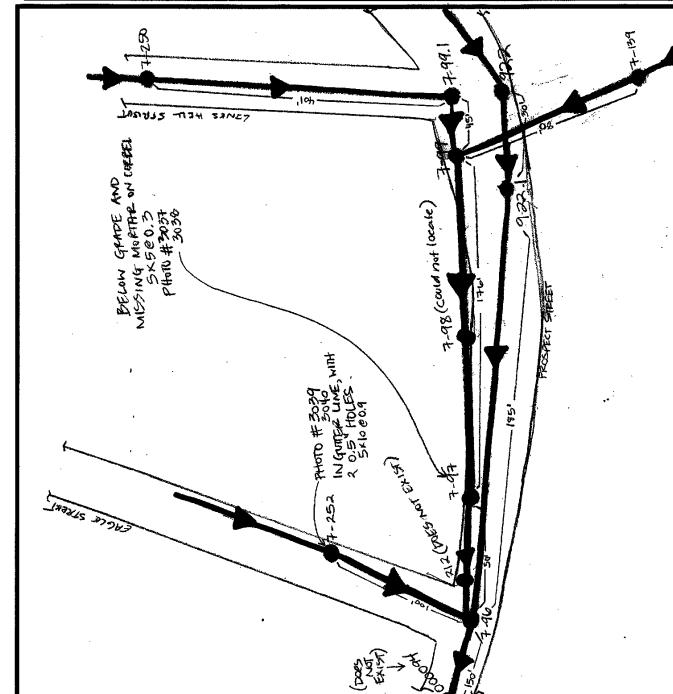


Image #:

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 9.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Prospect Street

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/10/2015

Inspector: RV/RM

Findings:

MH 7-103 is 1" below grade and has two 0.5" holes in cover- direct connection

**Drainage
Area SqFt**

100

**Runoff
Coeff**

0.9



Image #: DSCN3035.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Prospect Street Easement

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/10/2015

Inspector: RV/RM

Findings:

MH 7-116 is buried 6" with two 0.5" holes in cover

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3032.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Prospect Street Easement

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/10/2015

Inspector: RV/RM

Findings:

MH 7-116 is buried 6" with two 0.5" holes in cover

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3033.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Prospect Street Easement

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/10/2015

Inspector: RV/RM

Findings:

MH 7-113 has a 1 GPM leak at the pipe connection of the outgoing line

Drainage
Area SqFt

0

Runoff
Coeff

0



Image #: DSCN3029.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Prospect Street Easement

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/10/2015

Inspector: RV/RM

Findings:

MH 7-113 has a 1 GPM leak at the pipe connection of the outgoing line

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3030.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Prospect Street Easement

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/10/2015

Inspector: RV/RM

Findings:

MH 7-116 is buried 6" with two 0.5" holes in cover

**Drainage
Area SqFt**

100

**Runoff
Coeff**

0.3



Image #: DSCN3031.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
156 Union City Road

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/03/2015

Inspector: RV/RM

Findings:

Smoke from 4" PVC pipe - direct connection

Drainage Area SqFt	Runoff Coeff
225	0.3

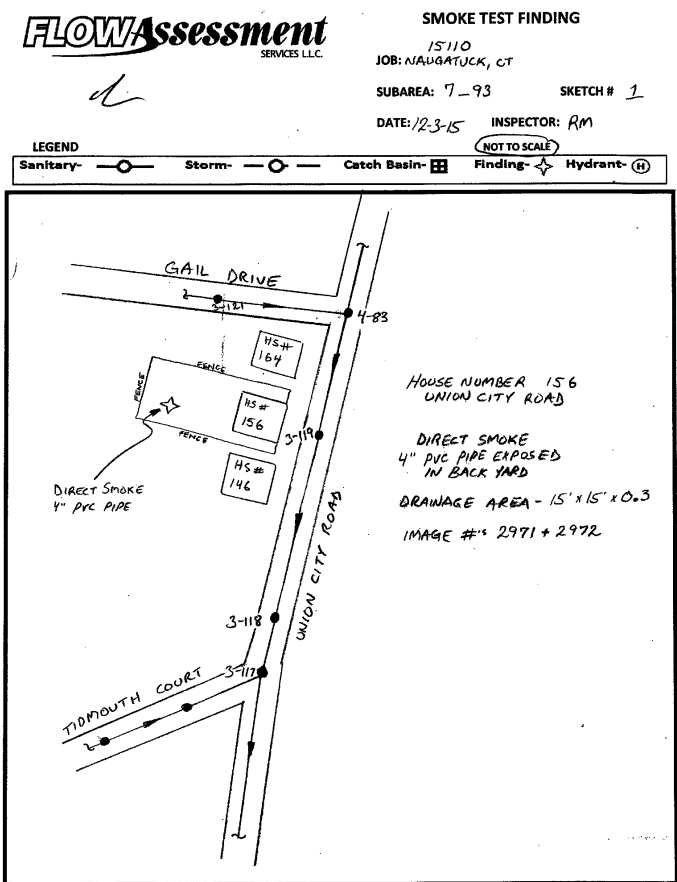


Image #: DSCN2971.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 1.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
156 Union City Road

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/03/2015

Inspector: RV/RM

Findings:

Smoke from 4" PVC pipe - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



FLOW Assessment SERVICES L.L.C.

SMOKE TEST FINDING

15110
JOB: NAUGATUCK, CT
SUBAREA: 7_93 SKETCH # 1
DATE: 12-3-15 INSPECTOR: RM

LEGEND
Sanitary - ○ Storm - ○ Catch Basin - □ Finding - ★ Hydrant - (H)
(NOT TO SCALE)

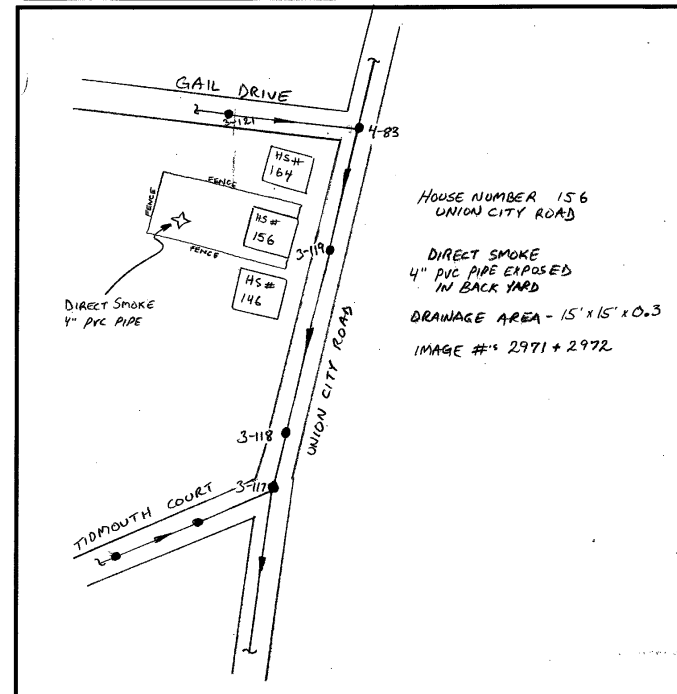


Image #: DSCN2972.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 1.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
231 Union City Road

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/04/2015

Inspector: RV/RM

Findings:

Light smoke from catch basin - indirect connection

Drainage Area SqFt

0

Runoff Coeff

0



Image #: DSCN2974.JPG



SMOKE TEST FINDING

JOB: 15110

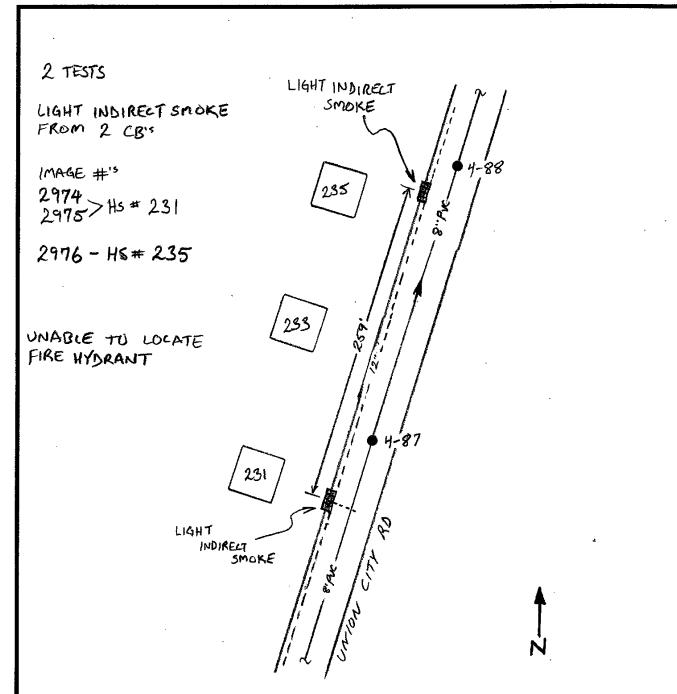
SUBAREA: 7_93

SKETCH # 3

DATE: 12-4-15

INSPECTOR: RM

LEGEND
Sanitary- ○ Storm- ○ Catch Basin- □ Finding- ⚡ Hydrant- (H)
(NOT TO SCALE)



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 3.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
231 Union City Road

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/04/2015

Inspector: RV/RM

Findings:

Light smoke from catch basin - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



FLOW Assessment SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110
SUBAREA: 7_93 SKETCH # 3
DATE: 12-4-15 INSPECTOR: RM

LEGEND
Sanitary - ○ Storm - ○ Catch Basin - □ Finding - ⚡ Hydrant - ⊕
(NOT TO SCALE)

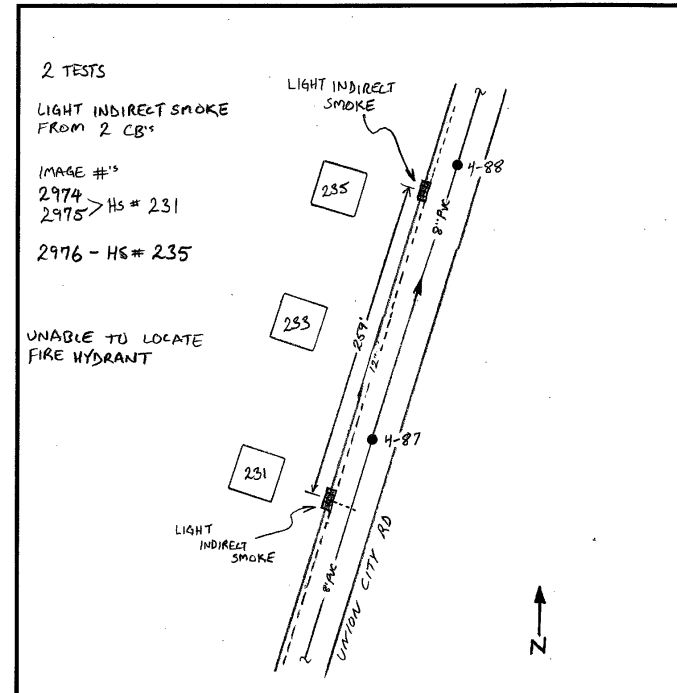


Image #: DSCN2975.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 3.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
235 Union City Road

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/04/2015

Inspector: RV/RM

Findings:

Light smoke from catch basin - indirect connection

Drainage
Area SqFt

0

Runoff
Coeff

0



Image #: DSCN2976.JPG



SMOKE TEST FINDING

JOB: 15110

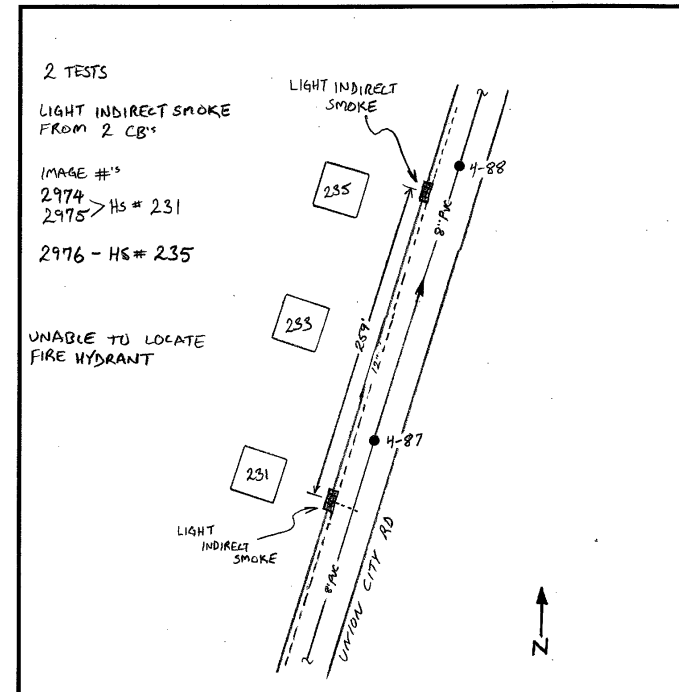
SUBAREA: 7_93

SKETCH # 3

DATE: 12-4-15

INSPECTOR: RM

LEGEND
Sanitary - Storm - Catch Basin - Finding - Hydrant - (NOT TO SCALE)



Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 3.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
Finding Location:
 111 Wooster Street Building 5

Sub-System: 7_93

Smoke Testing Log

Project No: 15110
Date: 12/09/2015
Inspector: RV/RM

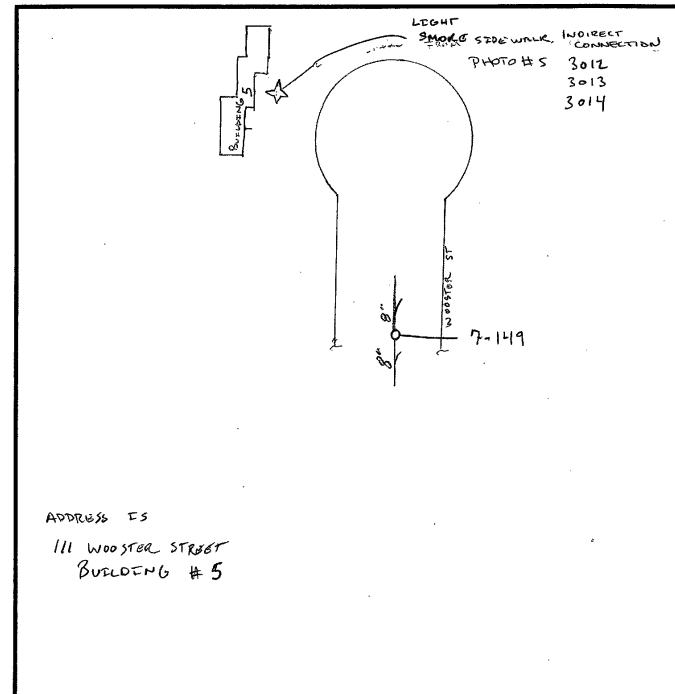
Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from sidewalk - indirect connection	0	0



SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 6
 DATE: 12-9-15 INSPECTOR: RV

LEGEND		NOT TO SCALE	
Sanitary-	Storm-	Catch Basin-	Finding-
			Hydrant-



Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

111 Wooster Street Building 5

Sub-System: 7_93

Smoke Testing Log

Project No: 15110

Date: 12/09/2015

Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from sidewalk - indirect connection	0	0



SMOKE TEST FINDING

JOB: 15110

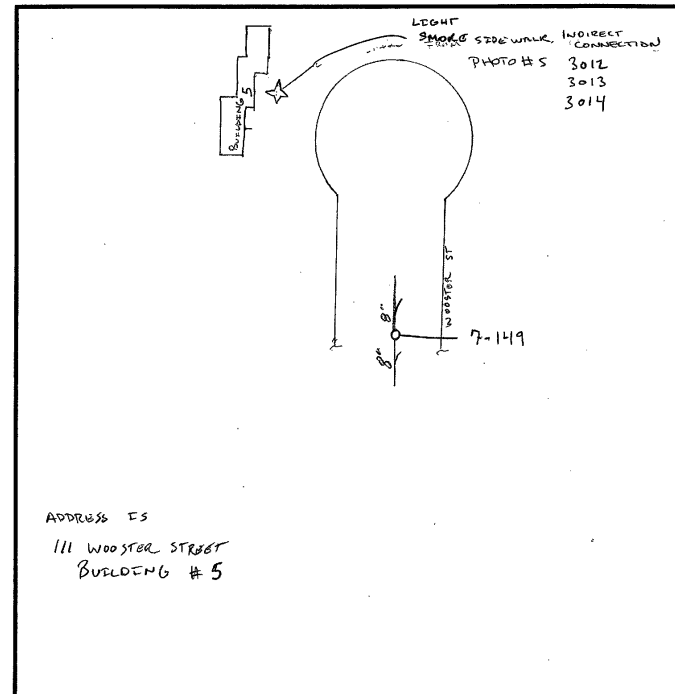
SUBAREA: 7_93

SKETCH # 6

DATE: 12-9-15

INSPECTOR: RV

LEGEND					
NOT TO SCALE					
Sanitary	Storm	Catch Basin	Finding	Hydrant	



Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
Finding Location:
 111 Wooster Street Building 5

Sub-System: 7_93

Smoke Testing Log

Project No: 15110
Date: 12/09/2015
Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from sidewalk - indirect connection	0	0



FLOW Assessment SERVICES L.L.C.

SMOKE TEST FINDING

JOB: 15110
 SUBAREA: 7_93 SKETCH # 6
 DATE: 12-9-15 INSPECTOR: RV

LEGEND NOT TO SCALE
 Sanitary- (circle with cross) Storm- (circle with dot) Catch Basin- (square with cross) Finding- (star) Hydrant- (circle with cross)

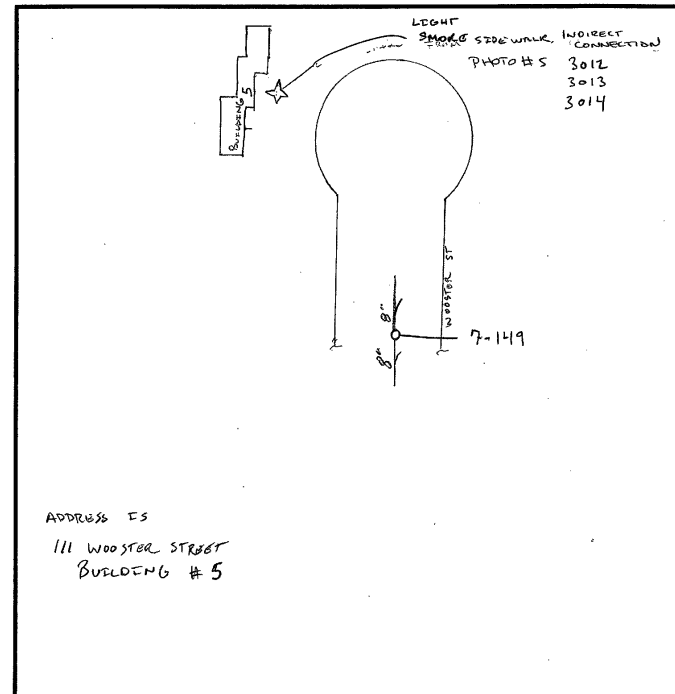


Image #: DSCN3012.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 7_93 Sketch 6.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 80 Cliff Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110
 Date: 01/07/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Heavy smoke from retaining wall - direct connection	25	0.3



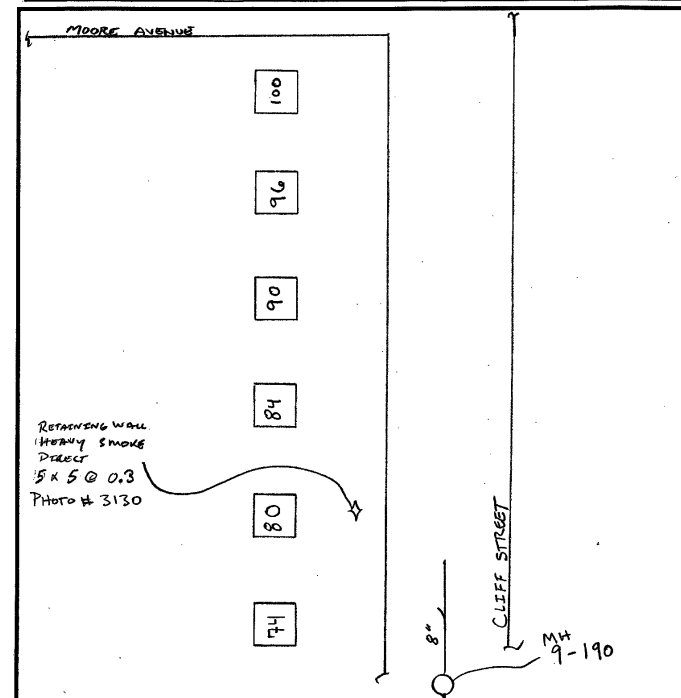
Image #: DSCN3130.JPG

FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 12
 DATE: 1/12/15 INSPECTOR: RV

LEGEND
 Sanitary: Storm: Catch Basin: Finding: Hydrant: NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 12.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

41 Dunn Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Light smoke from catch basin (1) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0

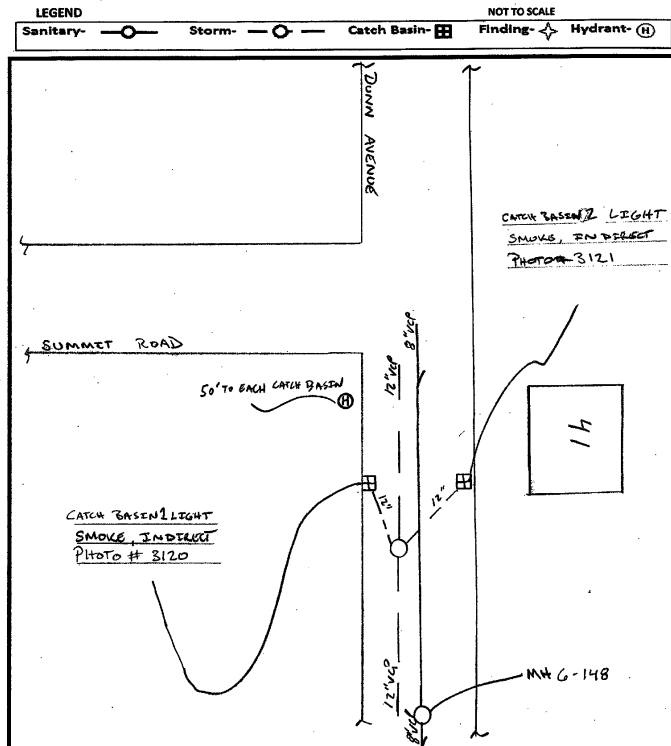


Image #: DSCN3120.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 9
 DATE: 1-12-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 9.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

41 Dunn Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Light smoke from catch basin (2) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0

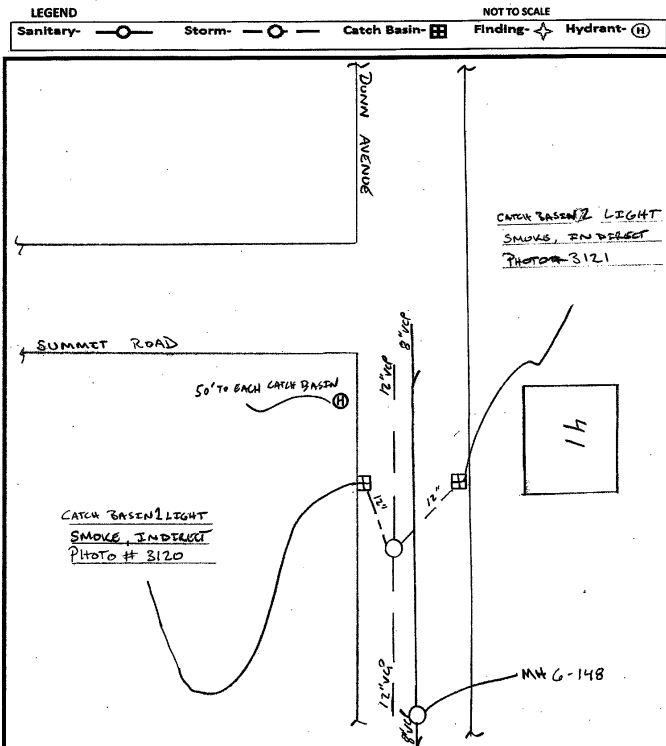


Image #: DSCN3121.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 9
 DATE: 1-12-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 9.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Grove Street at May Avenue

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin (3) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3110.JPG



SMOKE TEST FINDING

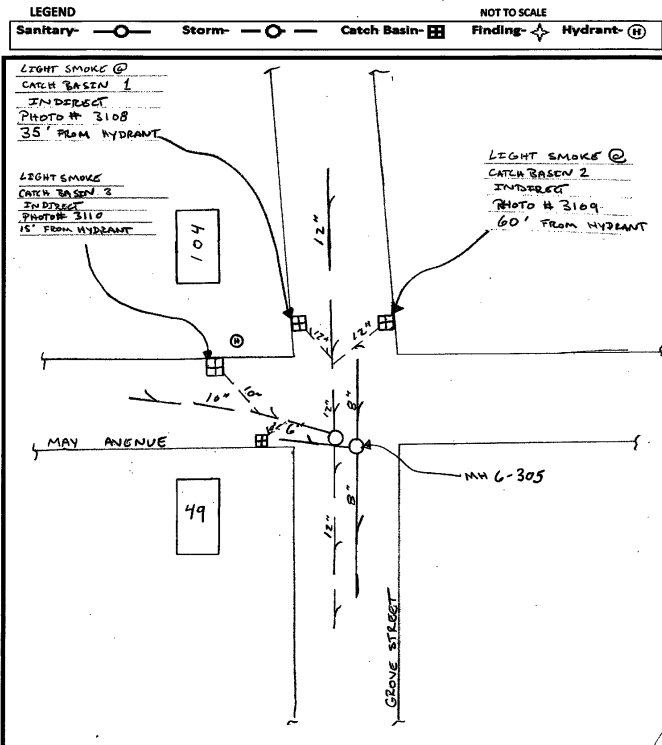
JOB: NAUGATUCK, CT.

SUBAREA: 9_2

SKETCH # 5

DATE: 1/12/16

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 5.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Grove Street at May Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin (1) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3108.JPG

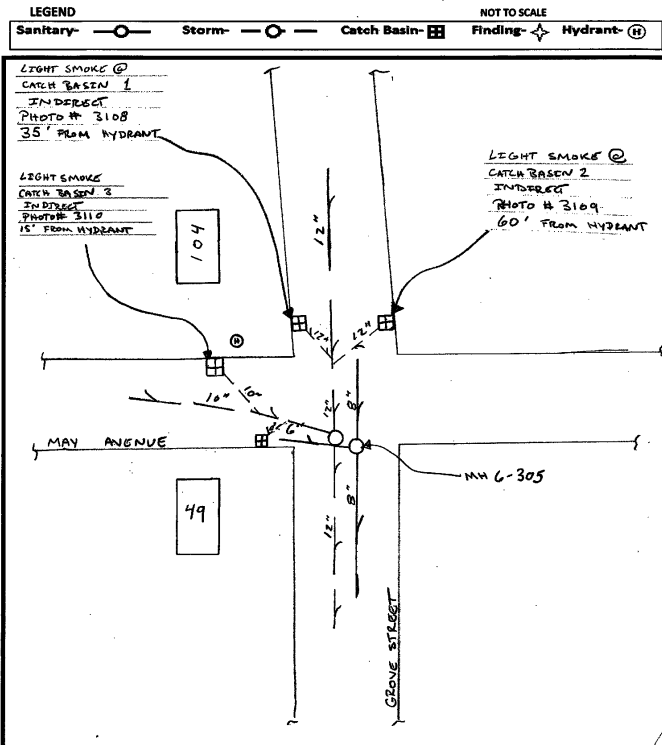


SMOKE TEST FINDING

JOB: NAUGATUCK, CT.

SUBAREA: 9_2 SKETCH # 5

DATE: 1/12/16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 5.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Grove Street at May Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin (2) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3109.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT.

SUBAREA: 9_2

SKETCH # 5

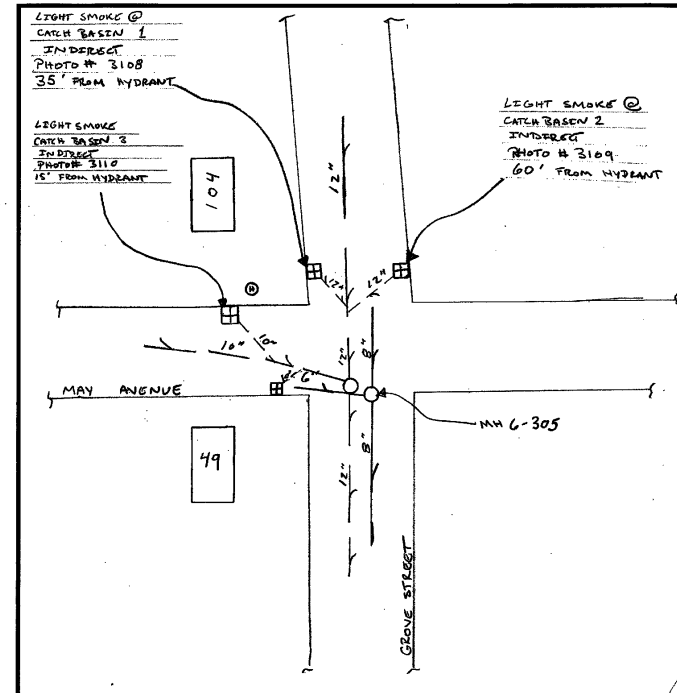
DATE: 1/12/16

INSPECTOR: RV

LEGEND

Sanitary	○	Storm	○	Catch Basin	□	Finding	⚡	Hydrant	⊕
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NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 5.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

39 Highland Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Heavy smoke from 4" PVC pipe in ground - direct connection	0	0



FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2 SKETCH # 10

DATE: 1/7/16 INSPECTOR: RV

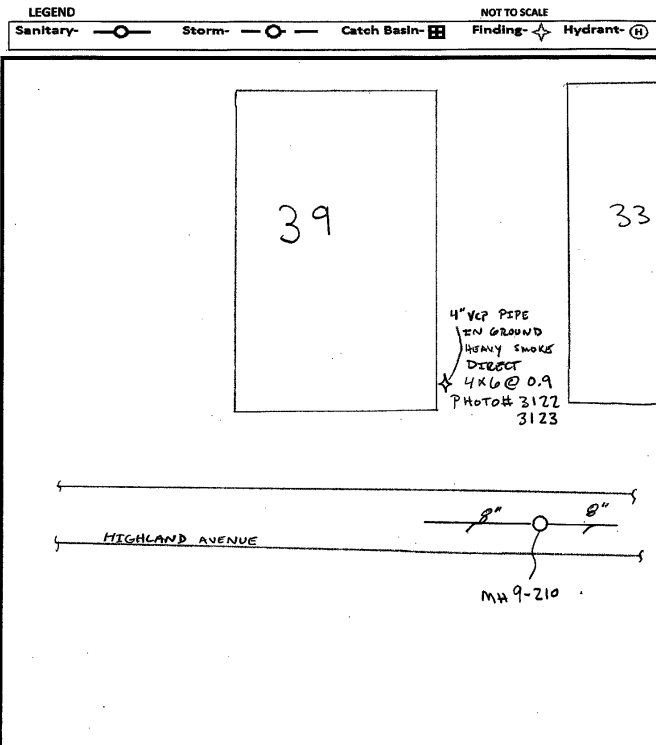


Image #: DSCN3123.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 10.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

39 Highland Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Heavy smoke from 4" PVC pipe in ground - direct connection	24	0.9



FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2 SKETCH # 10

DATE: 1/2/15 INSPECTOR: RV

LEGEND
Sanitary: Storm: Catch Basin: Finding: Hydrant:

NOT TO SCALE

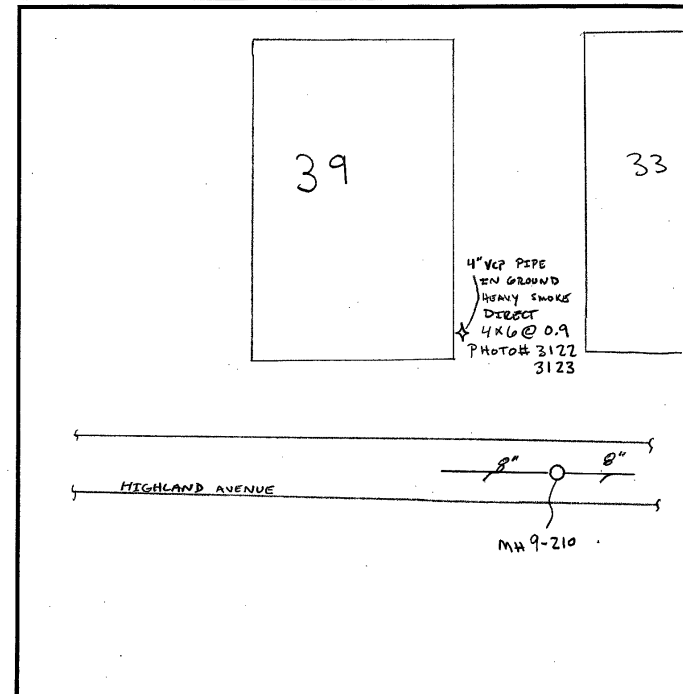


Image #: DSCN3122.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 10.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
Jones Road Easement

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Smoke from MH 5-74, missing corbel, near wetlands - direct connection	0	0



Image #: DSCN3046.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Jones Road Easement

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Smoke from MH 5-73, 1" below grade, near wetlands - direct connection

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3047.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

10 Lynn Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Heavy smoke from 2 roof leaders - direct connection

Drainage Area SqFt	Runoff Coeff
1050	0.9



Image #: DSCN3136.JPG

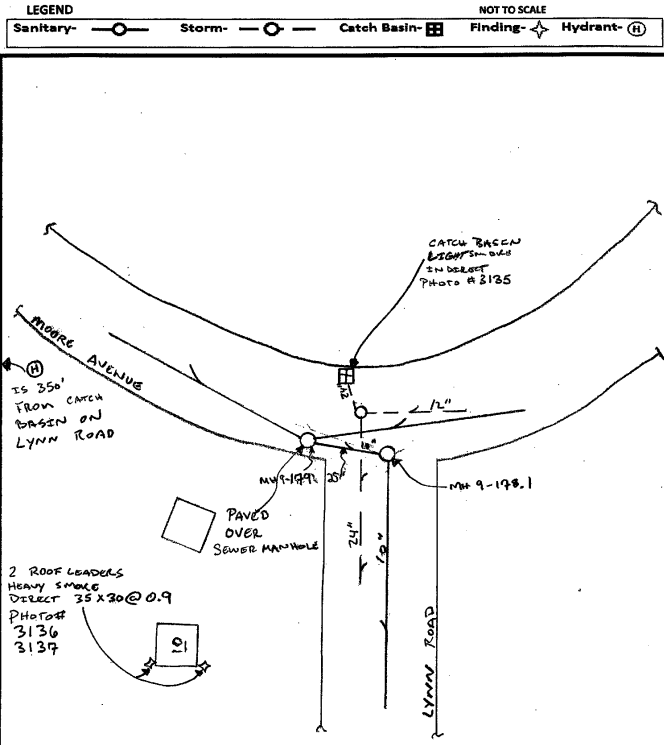


SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2 SKETCH # 14

DATE: 1-13-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 14.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

10 Lynn Road

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Heavy smoke from 2 roof leaders - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3137.JPG

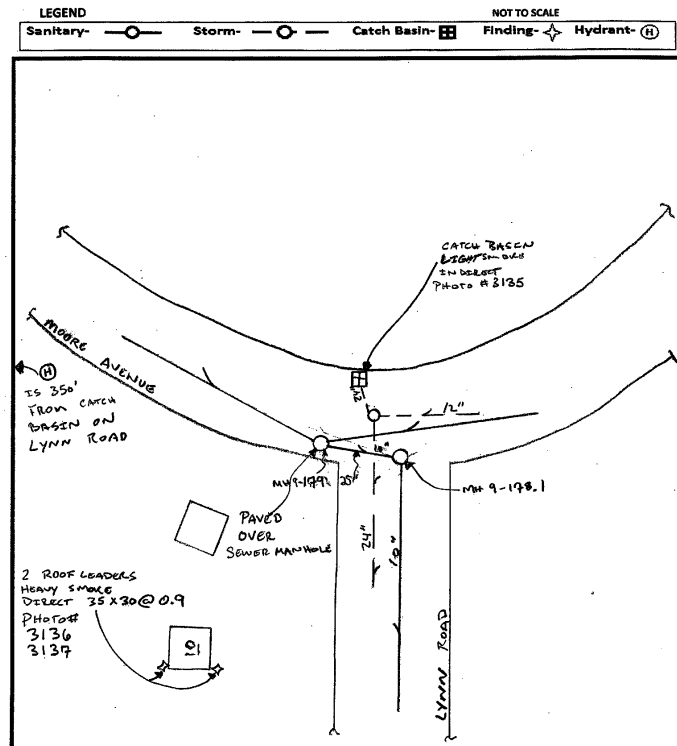
FLOWAssessment
SERVICES LLC.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2 SKETCH # 14

DATE: 1-13-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 14.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
100 Manners Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/05/2016

Inspector: RV

Findings:

Heavy smoke from catch basin at end of driveway - direct connection

Drainage Area SqFt	Runoff Coeff
5200	0.9



Image #: DSCN3144.JPG

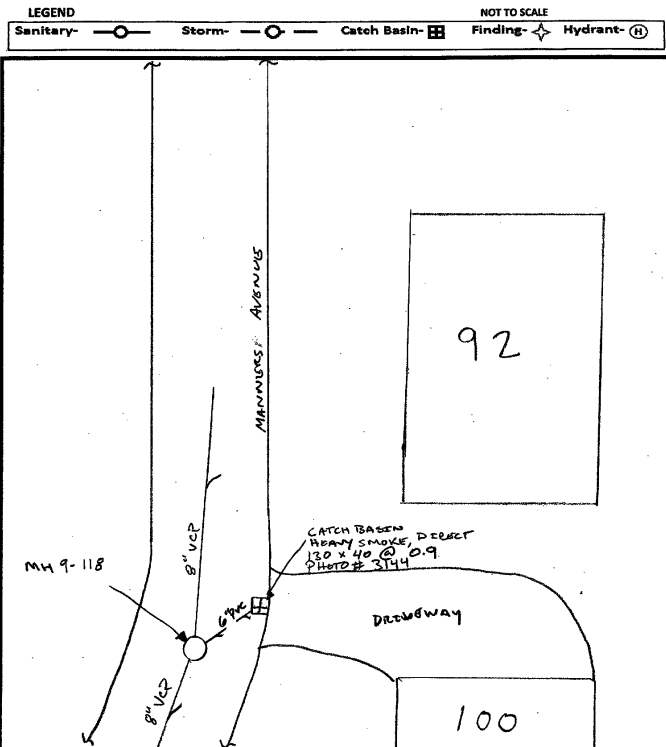


SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2 SKETCH # 19

DATE: 1-13-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 19.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

May Avenue at New Street

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin (1) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3104.JPG

FLOW Assessment SERVICES L.L.C.

SMOKE TEST FINDING

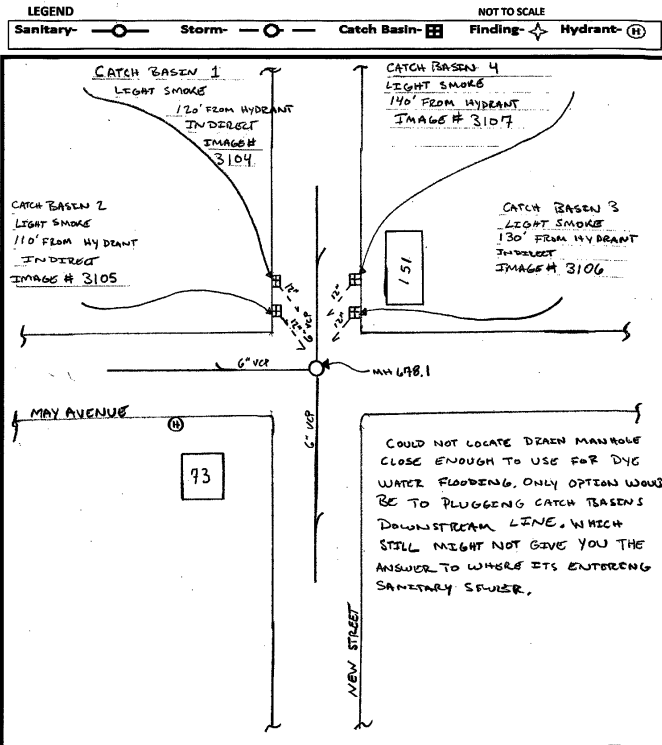
JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 4

DATE: 1/12/16

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 4.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

May Avenue at New Street

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin (2) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3105.JPG



SMOKE TEST FINDING

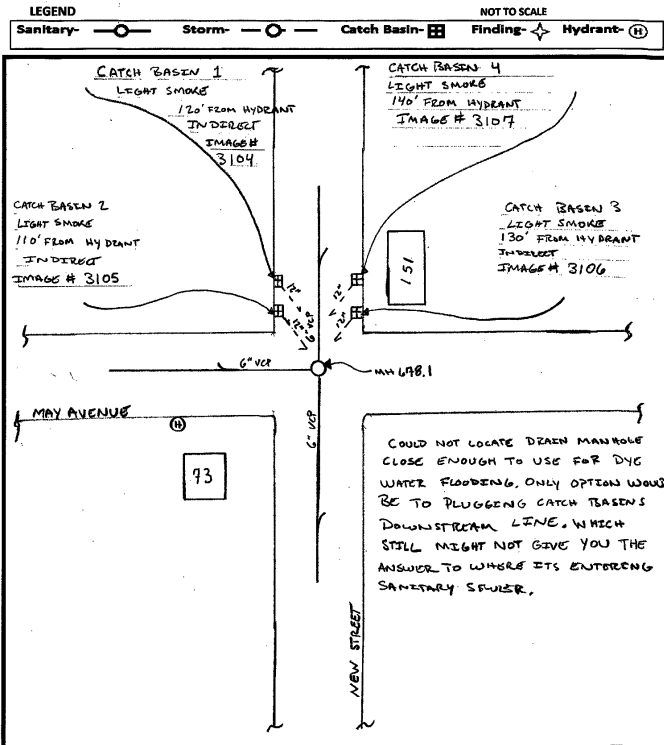
JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 4

DATE: 1/12/16

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 4.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

May Avenue at New Street

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin (3) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



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SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 4

DATE: 1/12/16

INSPECTOR: RV

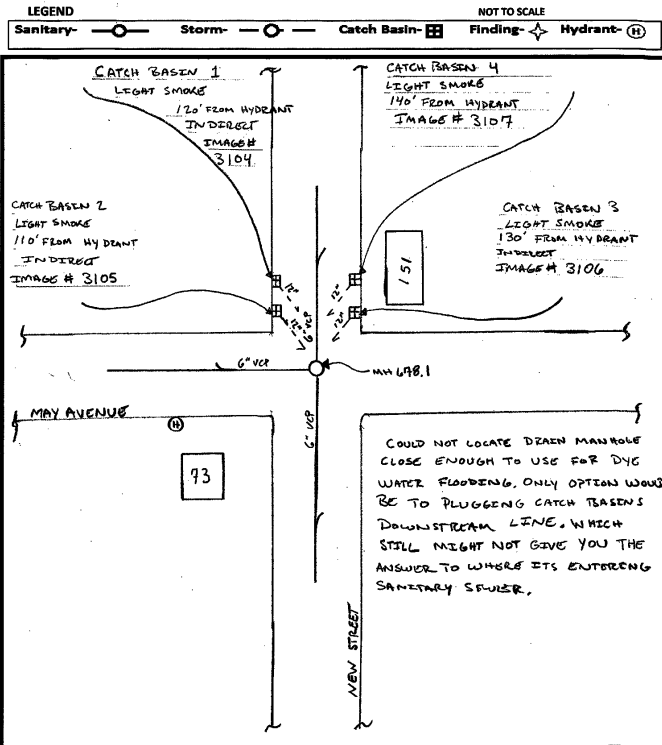


Image #: DSCN3106.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 4.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
79 Melbourne Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/04/2016

Inspector: RV

Findings:

Heavy smoke from 4" PVC pipe in ground - direct connection

Drainage Area SqFt	Runoff Coeff
24	0.9



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SMOKE TEST FINDING

JOB: NAUGATUCK, CT
SUBAREA: 9_2 SKETCH # 17
DATE: 1-13-16 INSPECTOR: RV

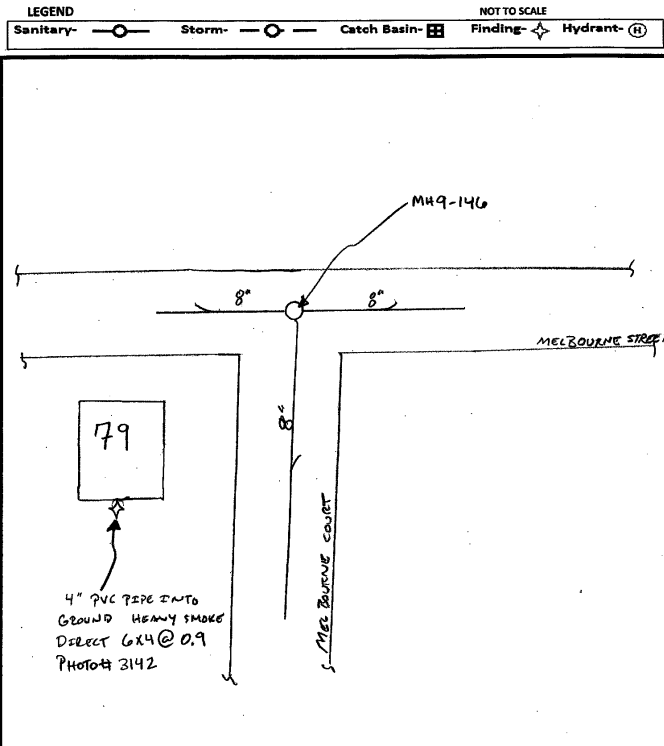


Image #: DSCN3142.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 17.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Moore Avenue at Lynn Road

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Light smoke from catch basin - indirect connection

Drainage Area SqFt

0

Runoff Coeff

0



Image #: DSCN3135.JPG

FLOWAssessment SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

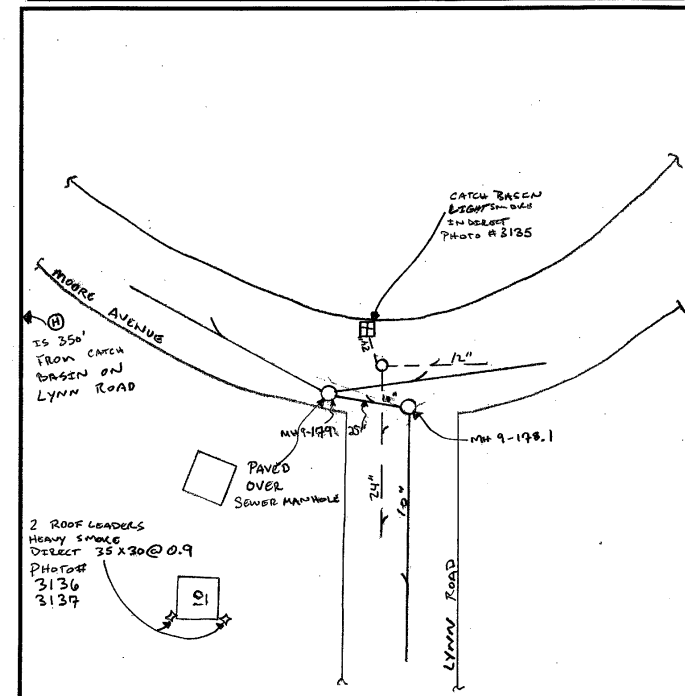
SUBAREA: 9_2

SKETCH # 14

DATE: 1-13-16 INSPECTOR: RV

LEGEND

Sanitary: Storm: Catch Basin: Finding: Hydrant: NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 14.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

64 New Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3098.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

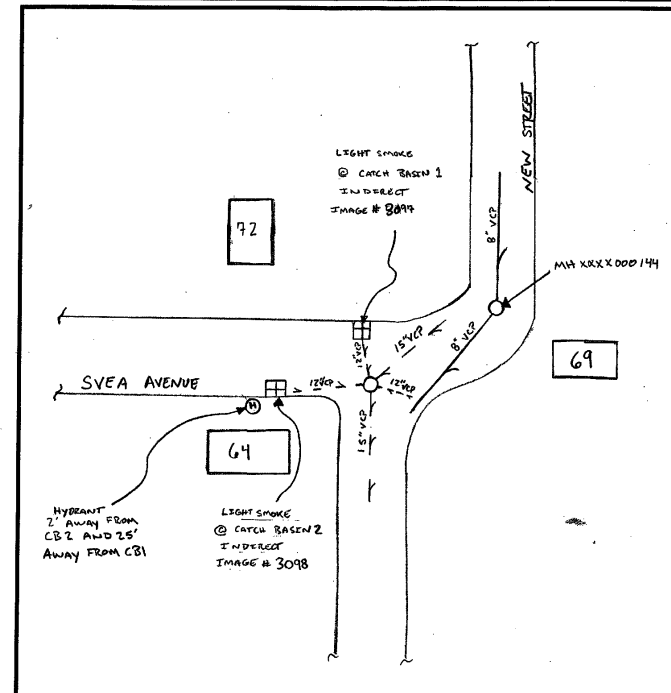
SKETCH # 2

DATE: 1/12/16 INSPECTOR: RV

LEGEND

Sanitary	Storm	Catch Basin	Finding	Hydrant
○	○	⊞	⚡	Ⓜ

NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 2.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

72 New Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke form catch basin - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3097.JPG

FLOW Assessment SERVICES L.L.C.

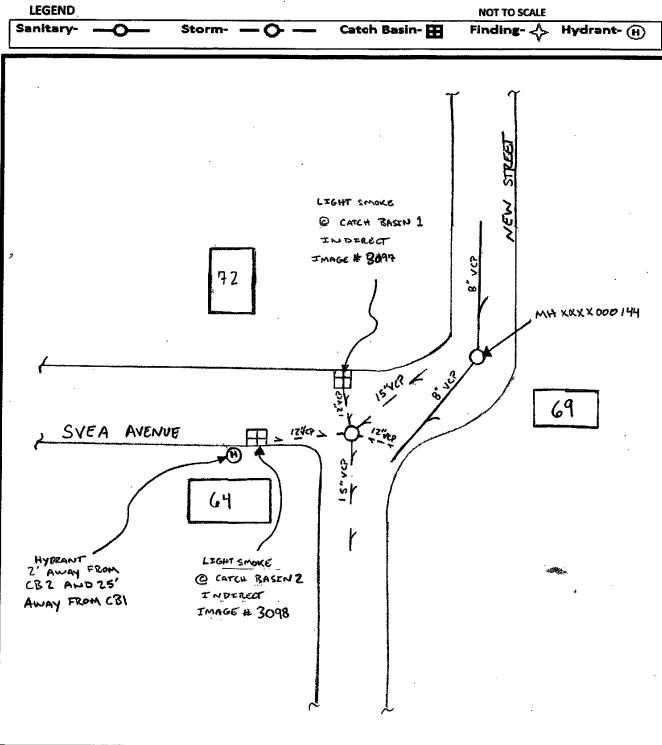
SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 2

DATE: 1/12/16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 2.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

107 New Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3099.JPG



SMOKE TEST FINDING

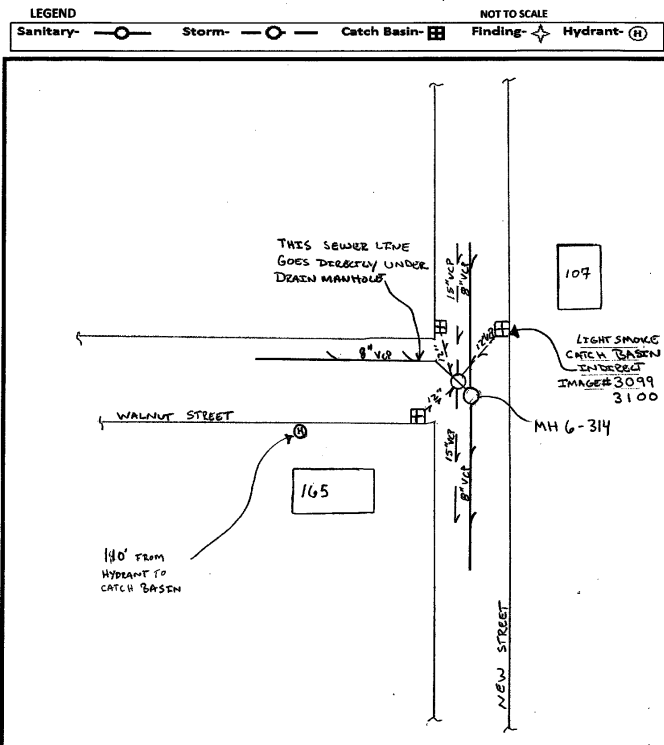
JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 3

DATE: 1/12/16

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 3.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

107 New Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from catch basin - indirect connection	0	0



Image #: DSCN3100.JPG

FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

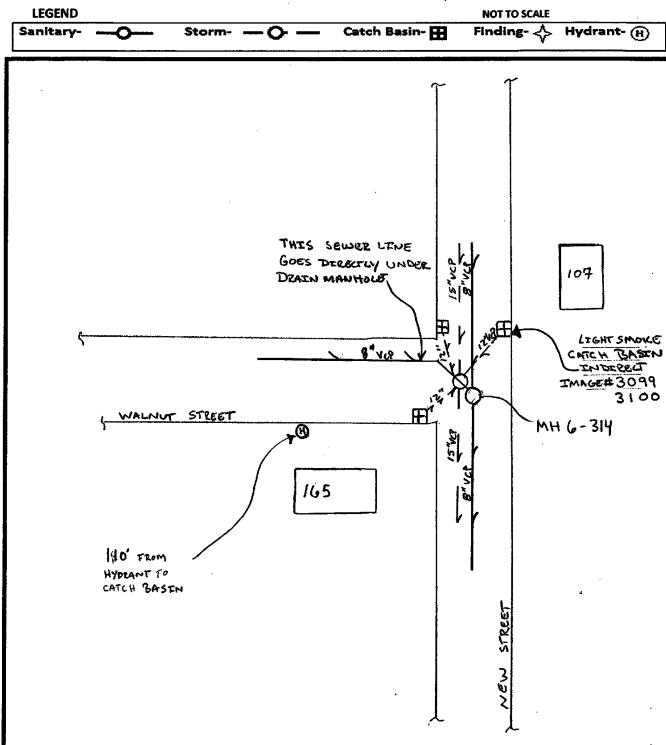
JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 3

DATE: 1/12/16

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 3.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 2 Park Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110
 Date: 01/07/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Heavy smoke from crack in driveway - direct connection	9	0.9

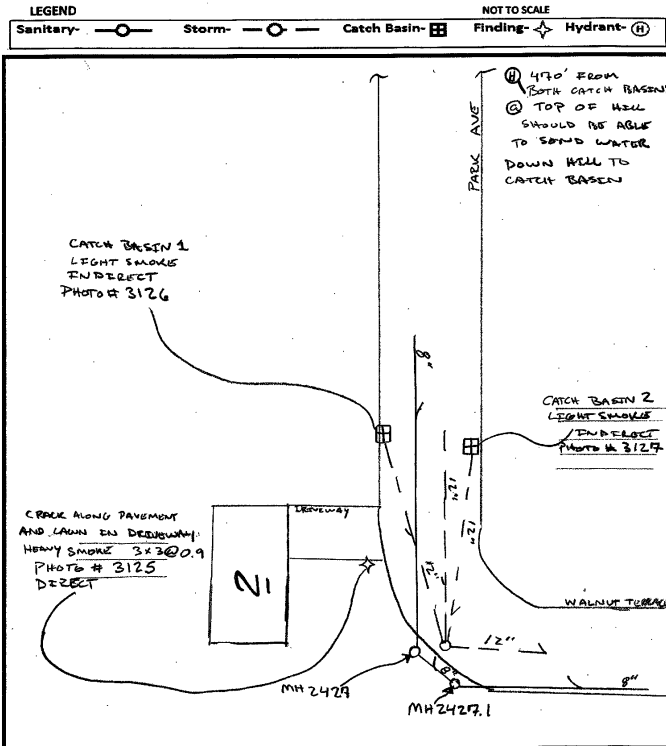


Image #: DSCN3125.JPG

FLOWAssessment
 SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 11
 DATE: 1/12/15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 11.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

2 Park Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Light smoke from catch basin (2) - indirect connection

Drainage Area SqFt

0

Runoff Coeff

0



Image #: DSCN3127.JPG

FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 11

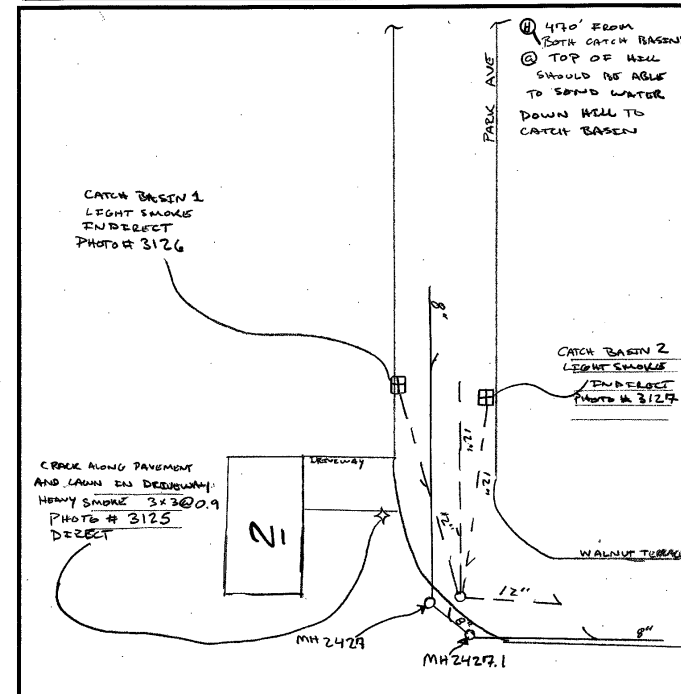
DATE: 1/12/15

INSPECTOR: RV

LEGEND

Sanitary: Storm: Catch Basin: Finding: Hydrant:

NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 11.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

2 Park Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Light smoke from catch basin (1) - indirect connection

Drainage Area SqFt

0

Runoff Coeff

0

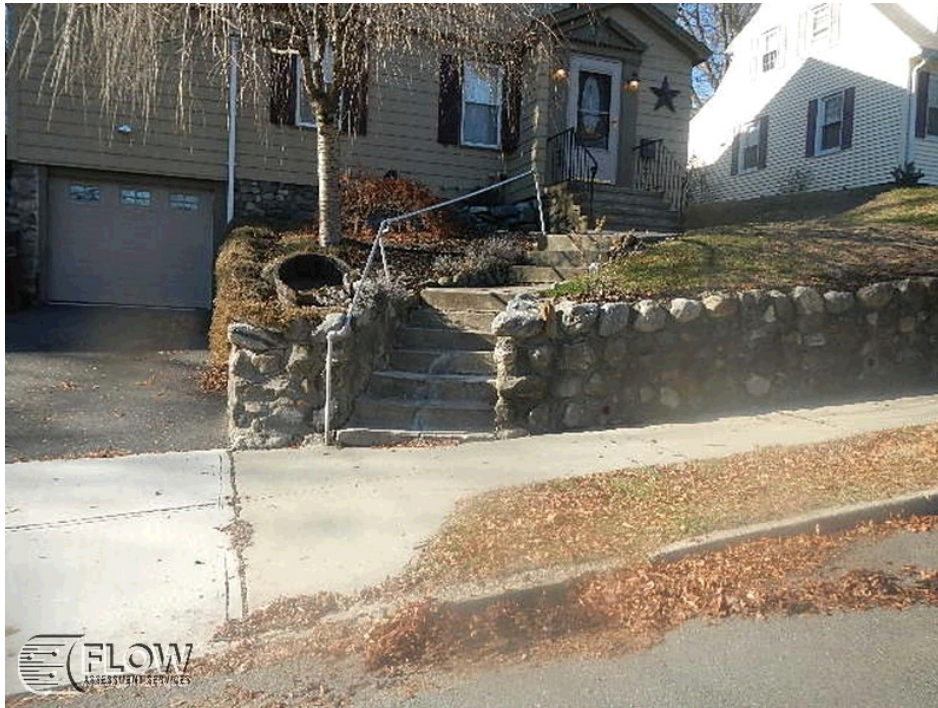


Image #: DSCN3126.JPG

FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 11

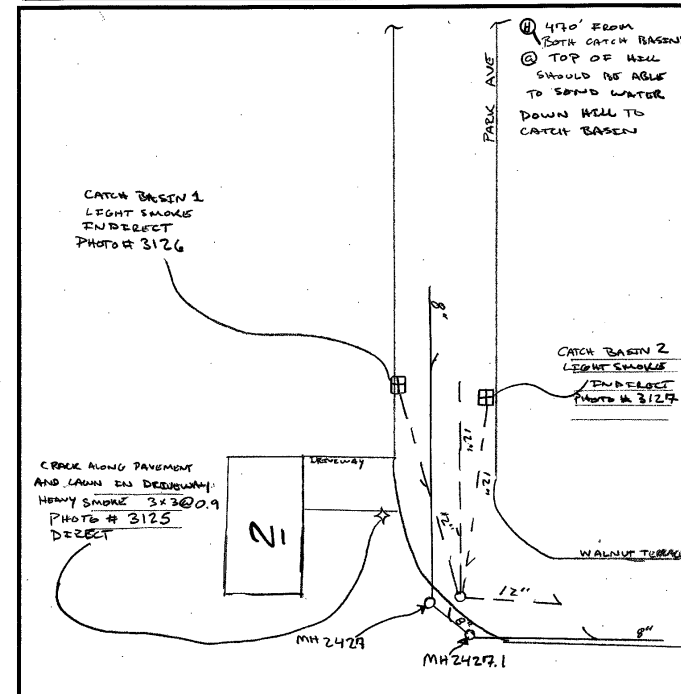
DATE: 1/12/15

INSPECTOR: RV

LEGEND

Sanitary: Storm: Catch Basin: Finding: Hydrant:

NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 11.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Pleasant View Street at Fairview Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/08/2016

Inspector: RV

Findings:

Light smoke from catch basin (2) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



FLOWAssessment SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 15

DATE: 1-13-16

INSPECTOR: RV

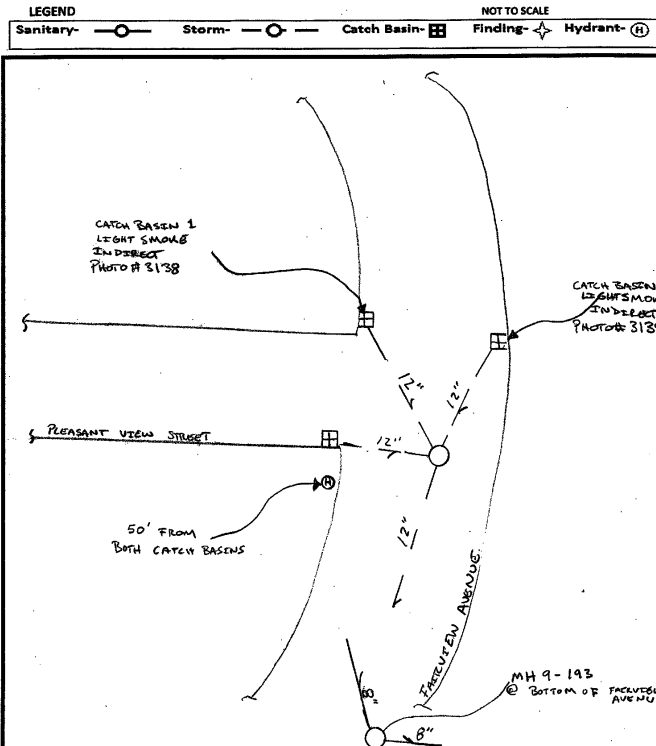


Image #: DSCN3139.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 15.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Pleasant View Street at Fairview Avenue

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/08/2016

Inspector: RV

Findings:

Light smoke from catch basin (1) - indirect connection

Drainage Area SqFt

0

Runoff Coeff

0



Image #: DSCN3138.JPG

FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

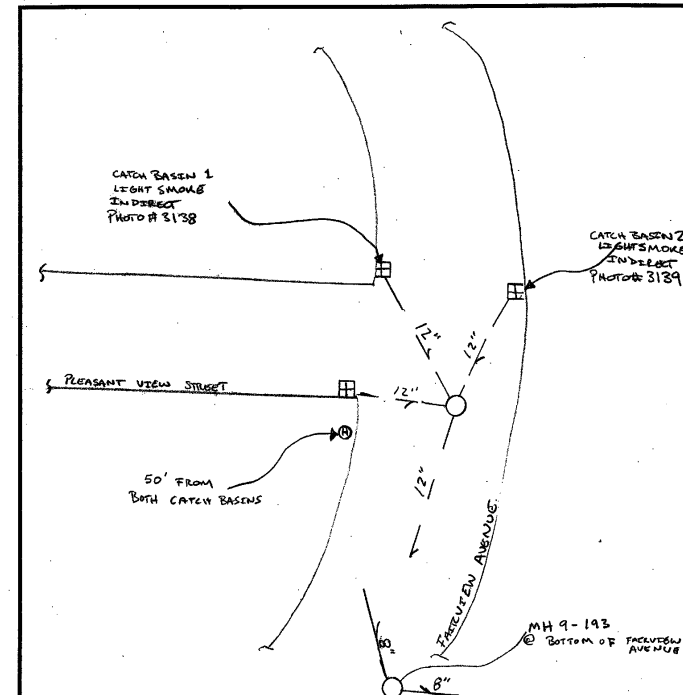
SKETCH # 15

DATE: 1-13-16 INSPECTOR: RV

LEGEND

NOT TO SCALE

Sanitary - Storm - Catch Basin - Finding - Hydrant -



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 15.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 42 Quinn Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110
 Date: 01/07/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from catch basin - indirect connection	0	0



FLOW Assessment SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 7
 DATE: 1-12-16 INSPECTOR: RV

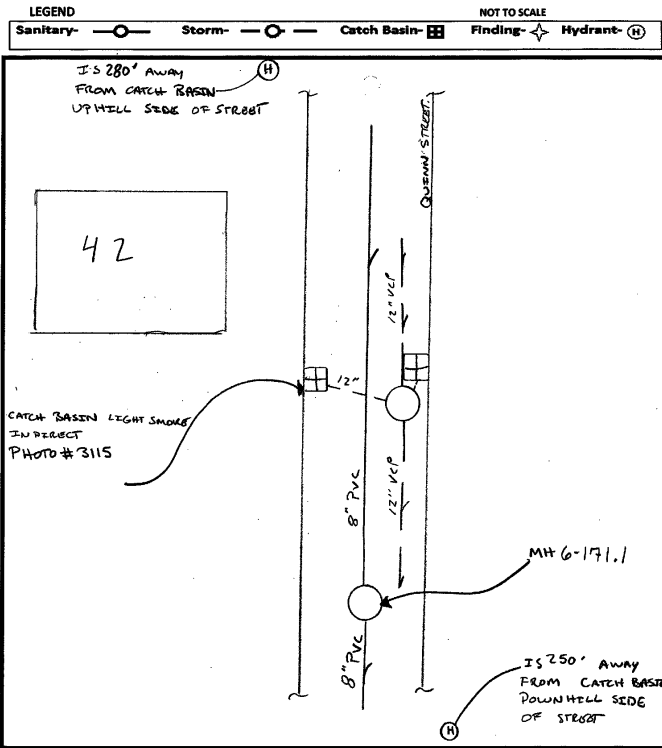


Image #: DSCN3115.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 7.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

219 Rubber Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin in driveway - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



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SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

SKETCH # 16

DATE: 1-13-16

INSPECTOR: RV

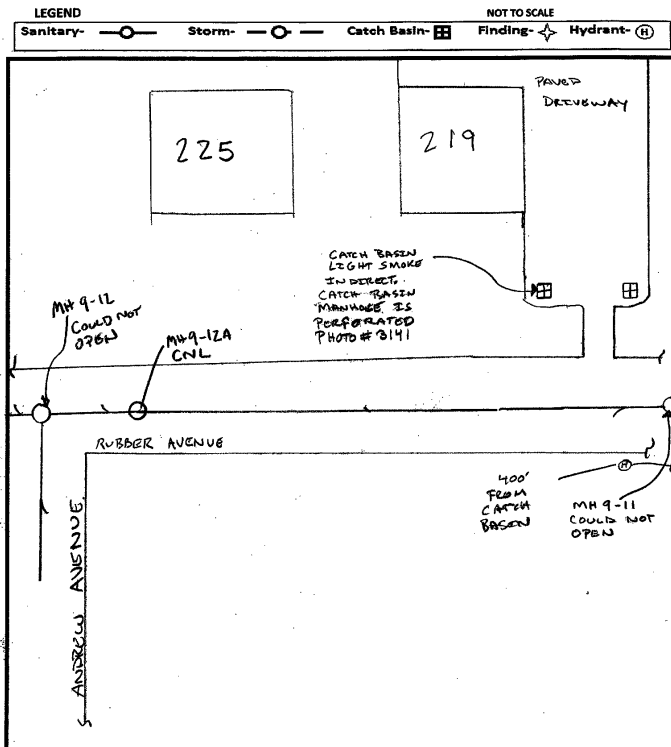


Image #: DSCN3141.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 16.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 648 Rubber Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110
 Date: 01/04/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from catch basin - indirect connection	0	0



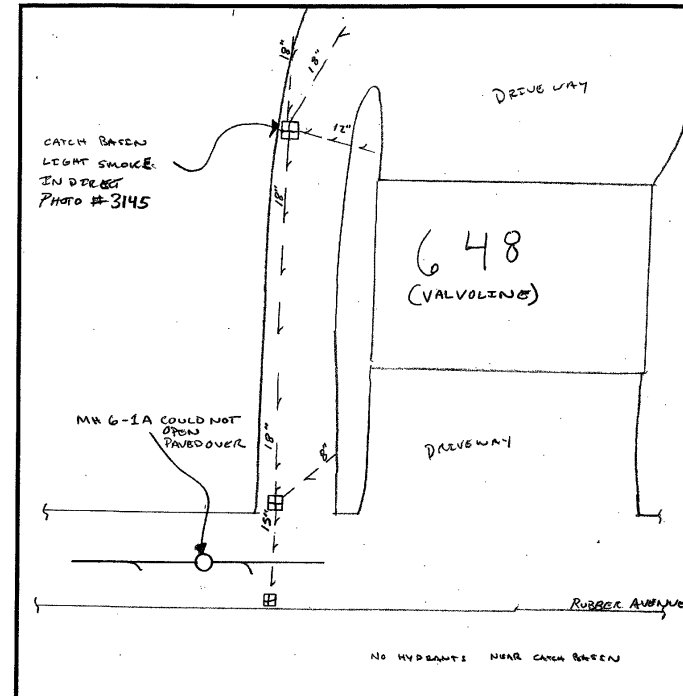
Image #: DSCN3145.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 20
 DATE: 1-14-16 INSPECTOR: RV

LEGEND
 Sanitary: ○ Storm: ○ Catch Basin: ■ Finding: ✦ Hydrant: (H)
 NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 20.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 198 Scott Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110
 Date: 01/05/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Heavy smoke from roof leader - direct connection	750	0.9

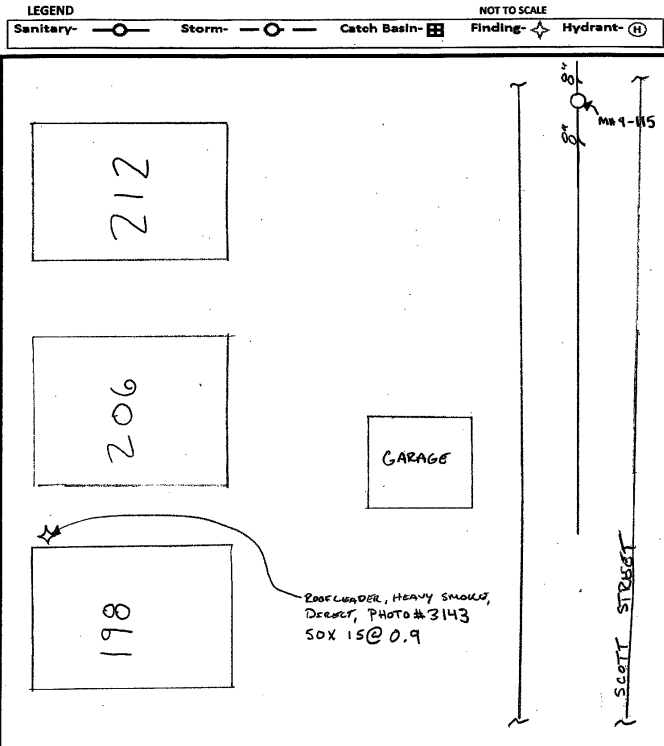


Image #: DSCN3143.JPG

FLOWAssessment
SERVICES L.L.C.

SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 18
 DATE: 1-13-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 18.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:
263 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110
Date: 12/16/2015
Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Smoke from broken cleanout - direct connection	0	0



Image #: DSCN3048.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

273 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Smoke from broken cleanout at grade- direct connection

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3049.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

303 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Medium smoke from catch basin - indirect connection

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3052.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

303 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Medium smoke from catch basin - indirect connection	0	0



Image #: DSCN3058.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

303 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Medium smoke from catch basin - indirect connection

Drainage
Area SqFt

0

Runoff
Coeff

0



Image #: DSCN3061.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

303 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Medium smoke from catch basin - indirect connection

**Drainage
Area SqFt**

0

**Runoff
Coeff**

0



Image #: DSCN3062.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

303 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Medium smoke from catch basin - indirect connection

Drainage
Area SqFt

Runoff
Coeff

0

0



Image #: DSCN3063.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

303 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Medium smoke from catch basin - indirect connection

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3051.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

303 Stone Fence Road

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Medium smoke from catch basin - indirect connection

Drainage
Area SqFt

0

Runoff
Coeff

0



Image #: DSCN3053.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 114/115 Trowbridge Place

Sub-System: 9_2

Smoke Testing Log

Project No: 15110
 Date: 01/07/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Heavy smoke from 4" VCP pipe in ground - direct connection	4	0.3

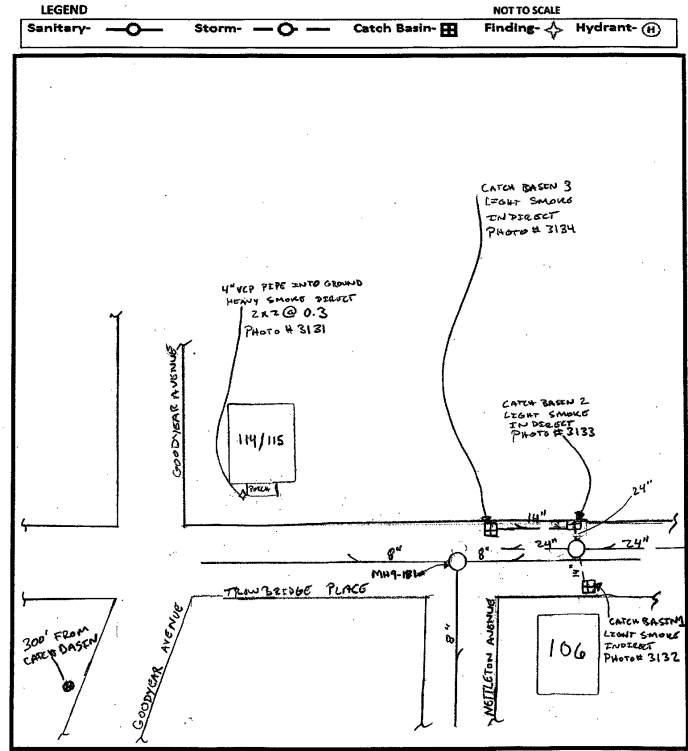


Image #: DSCN3131.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 13
 DATE: 1-12-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 13.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 Trowbridge Place near Nettleton Avenue

Smoke Testing Log

Sub-System: 9_2

Project No: 15110
 Date: 01/07/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from catch basin (1) - indirect connection	0	0

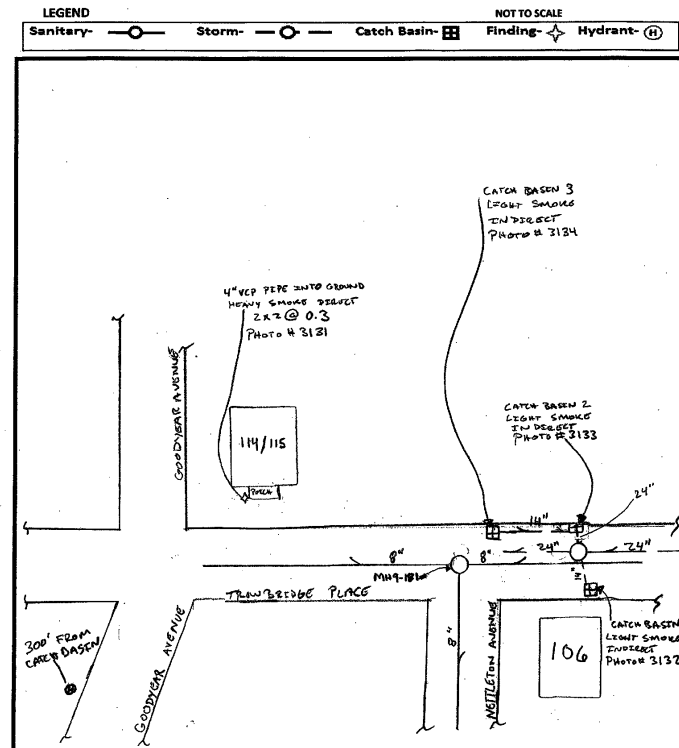


Image #: DSCN3132.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 13
 DATE: 1-12-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 13.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 Trowbridge Place near Nettleton Avenue

Smoke Testing Log

Sub-System: 9_2

Project No: 15110
 Date: 01/07/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from catch basin (2) - indirect connection	0	0

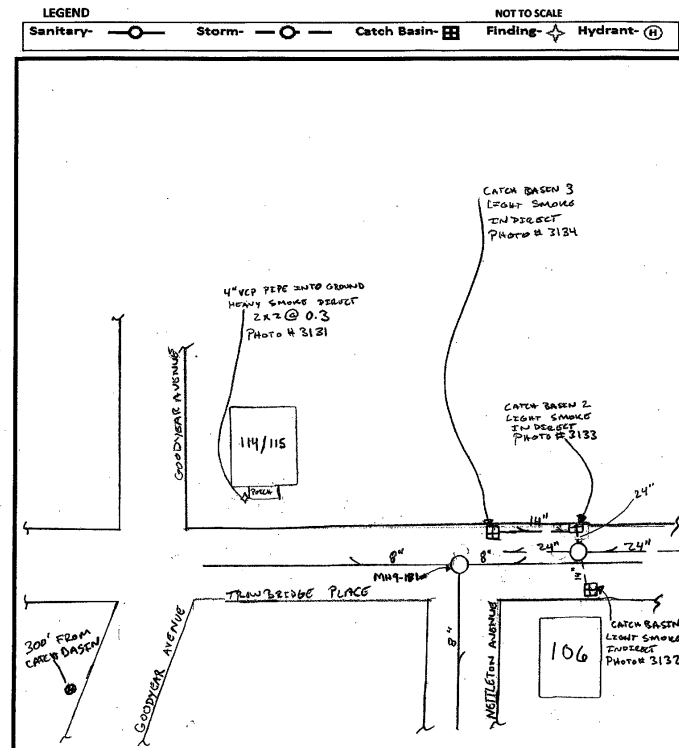


Image #: DSCN3133.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 13
 DATE: 1-12-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 13.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
 Finding Location:
 Trowbridge Place near Nettleton Avenue

Sub-System: 9_2

Smoke Testing Log

Project No: 15110
 Date: 01/07/2016
 Inspector: RV

Findings:	Drainage Area SqFt	Runoff Coeff
Light smoke from catch basin (3) - indirect connection	0	0

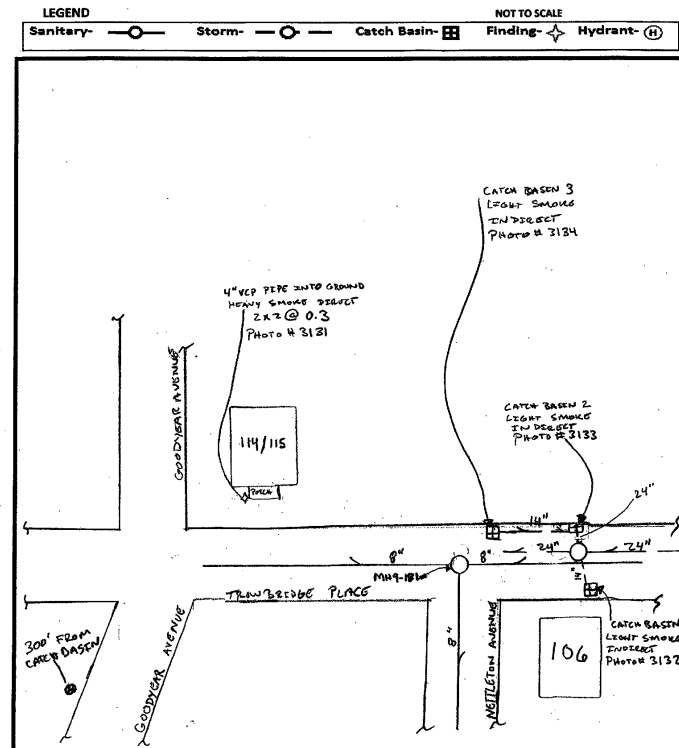


Image #: DSCN3134.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 13
 DATE: 1-12-16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 13.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

70 Walnut Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Heavy smoke from retaining wall and multiple spots on lawn - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



Image #: DSCN3117.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT

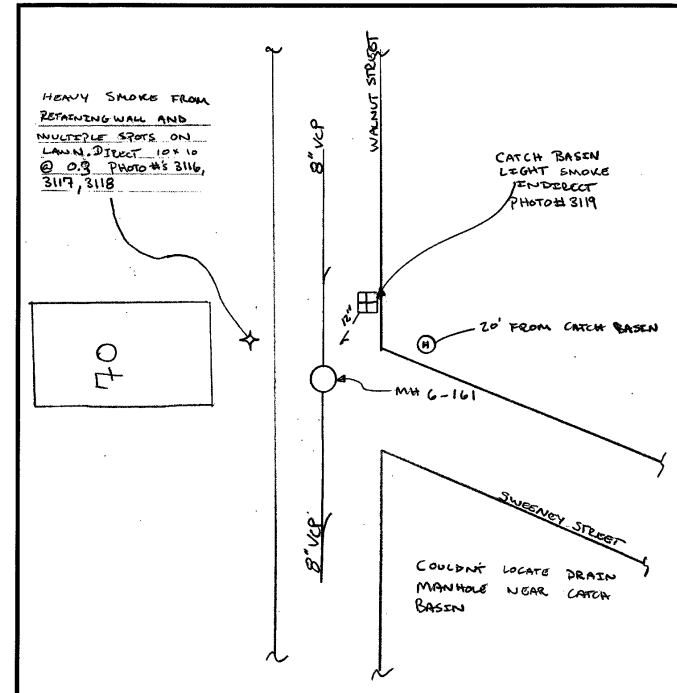
SUBAREA: 9_2

SKETCH # 8

DATE: 1-12-16

INSPECTOR: RV

LEGEND
 Sanitary: Storm: Catch Basin: Finding: Hydrant: NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

70 Walnut Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Heavy smoke from retaining wall and multiple spots on lawn - direct connection

Drainage Area SqFt	Runoff Coeff
0	0



SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2 SKETCH # 8

DATE: 1-12-16 INSPECTOR: RV

NOT TO SCALE

LEGEND

Sanitary	○	Storm	○	Catch Basin	■	Finding	★	Hydrant	⊕
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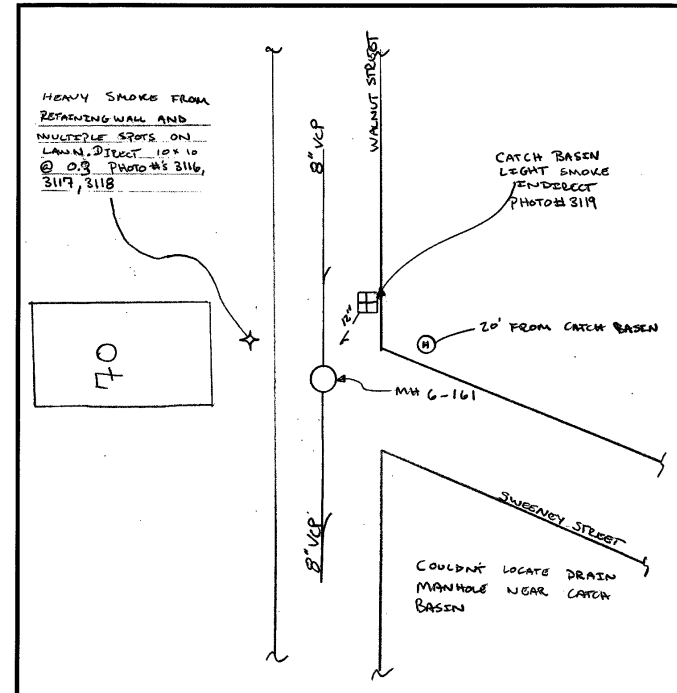


Image #: DSCN3118.JPG

Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

70 Walnut Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Heavy smoke from retaining wall and multiple spots on lawn - direct connection

Drainage Area SqFt

Runoff Coeff

100

0.3

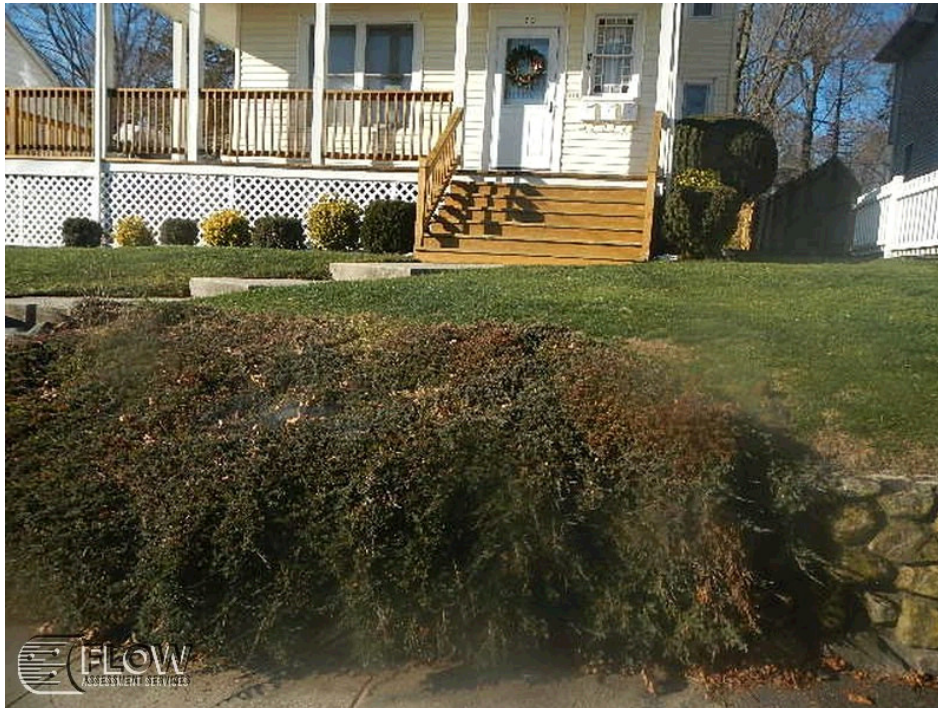


Image #: DSCN3116.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9_2

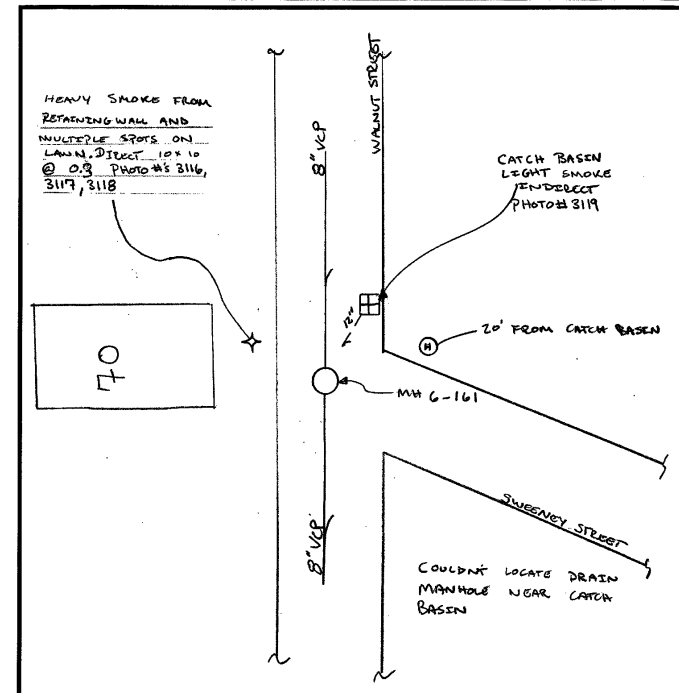
SKETCH # 8

DATE: 1-12-16

INSPECTOR: RV

NOT TO SCALE

LEGEND
 Sanitary: Storm: Catch Basin: Finding: Hydrant:



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

70 Walnut Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/07/2016

Inspector: RV

Findings:

Light smoke from catch basin - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0

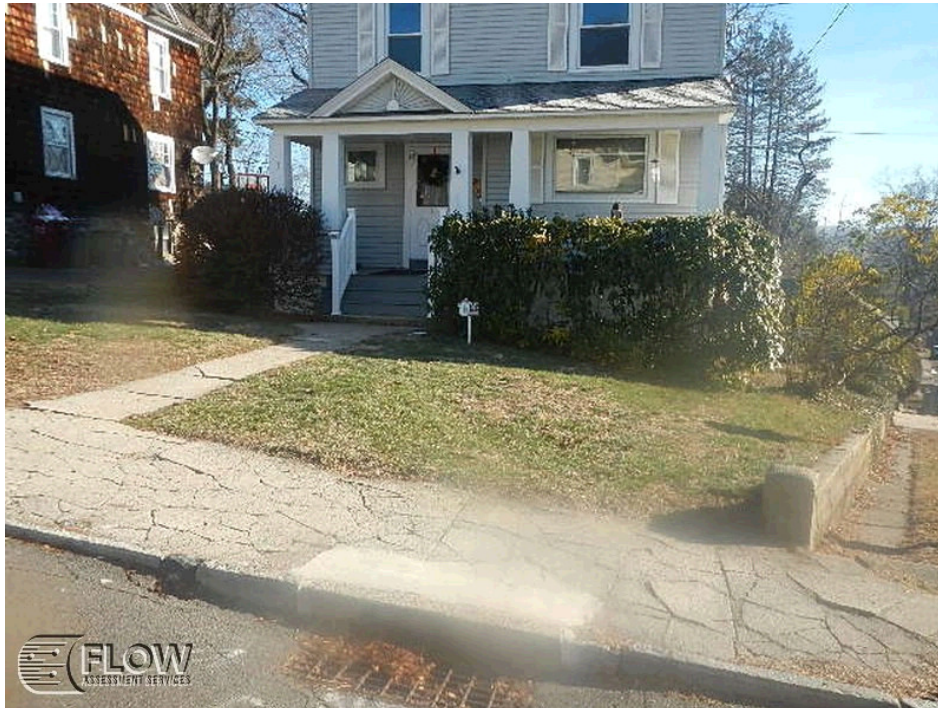


Image #: DSCN3119.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT

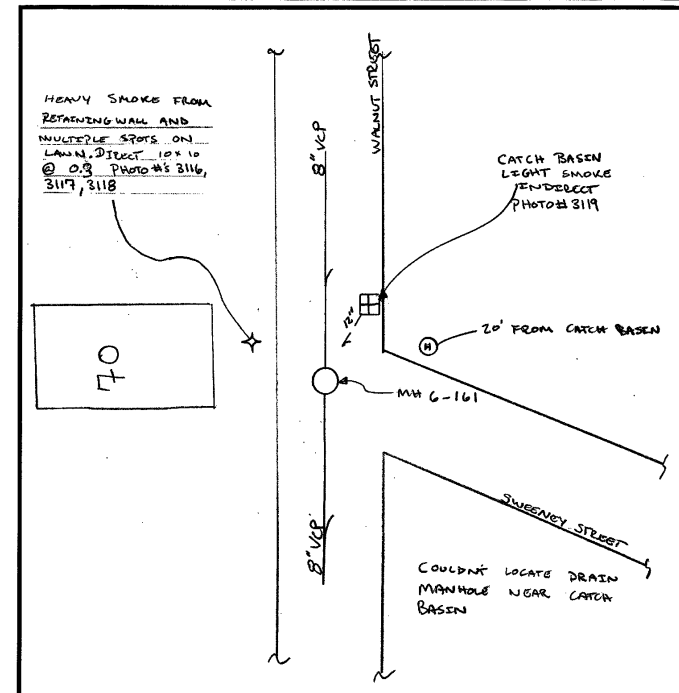
SUBAREA: 9_2 SKETCH # 8

DATE: 1-12-16 INSPECTOR: RV

NOT TO SCALE

LEGEND

Sanitary	Storm	Catch Basin	Finding	Hydrant



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 8.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

138 Walnut Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Smoke from roof leader - direct connection

Drainage Area SqFt	Runoff Coeff
300	0.9



Image #: DSCN3113.JPG



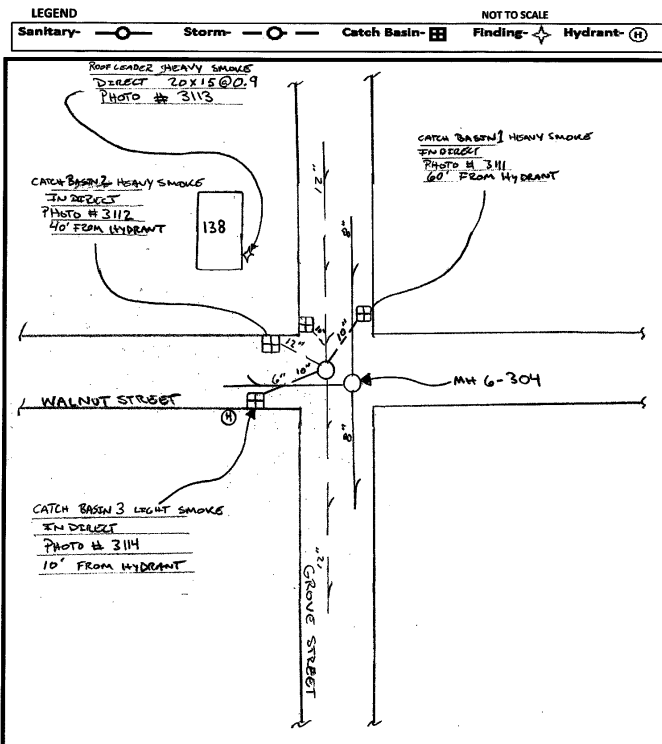
SMOKE TEST FINDING

JOB: NAUGATUCK, CT

SUBAREA: 9-2

SKETCH # 6

DATE: 1/12/16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 6.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Walnut Street at Grove Street

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

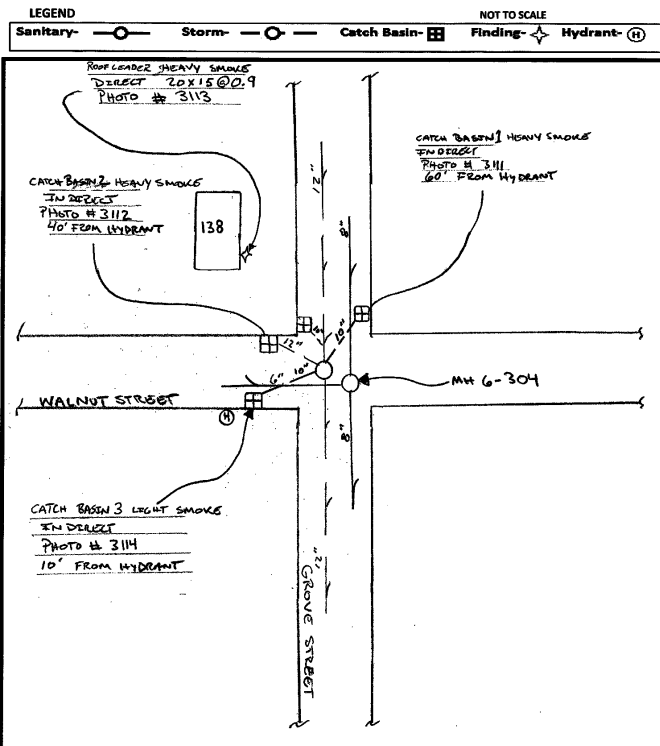
Heavy smoke from catch basin (1) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9-2 SKETCH # 6
 DATE: 1/12/16 INSPECTOR: RV



Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Walnut Street at Grove Street

Sub-System: 9_2

Smoke Testing Log

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Heavy smoke from catch basin (2) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0

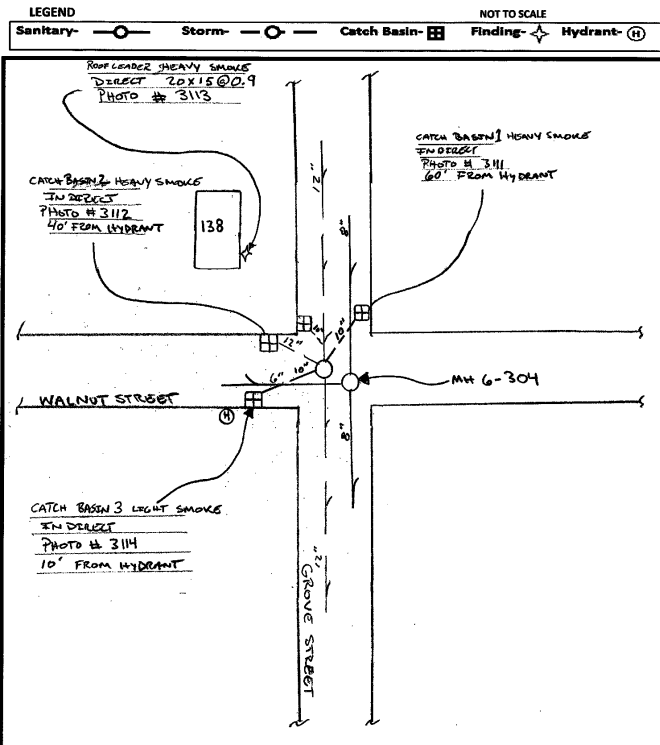


Image #: DSCN3112.JPG



SMOKE TEST FINDING

JOB: NAUGATUCK, CT
 SUBAREA: 9_2 SKETCH # 6
 DATE: 1/12/16 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 6.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Walnut Street at Grove Street

Smoke Testing Log

Sub-System: 9_2

Project No: 15110

Date: 01/06/2016

Inspector: RV

Findings:

Light smoke from catch basin (3) - indirect connection

Drainage Area SqFt	Runoff Coeff
0	0

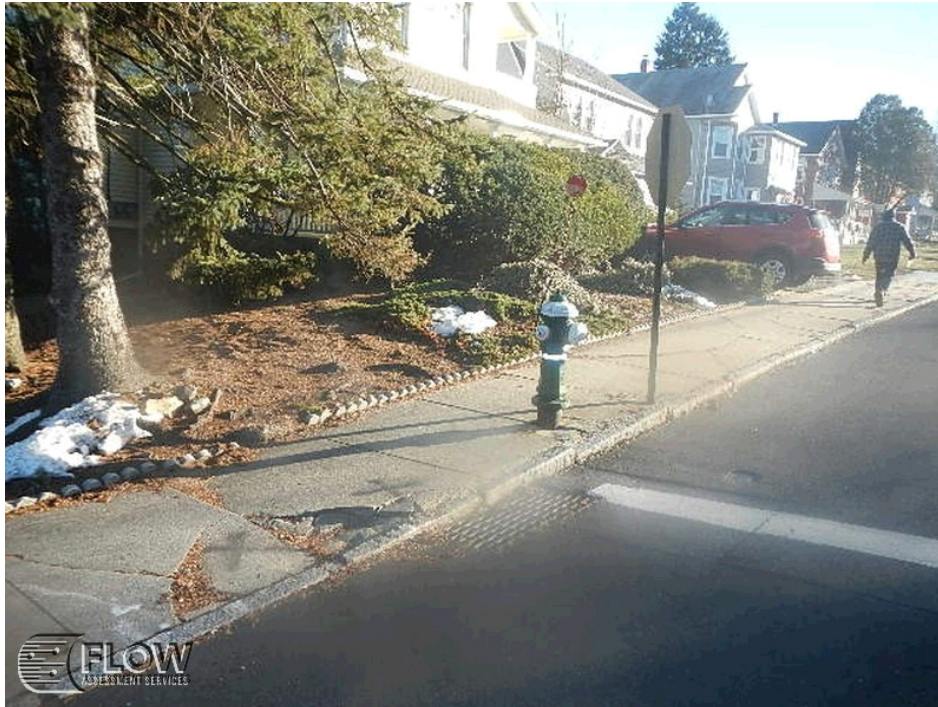


Image #: DSCN3114.JPG



SMOKE TEST FINDING

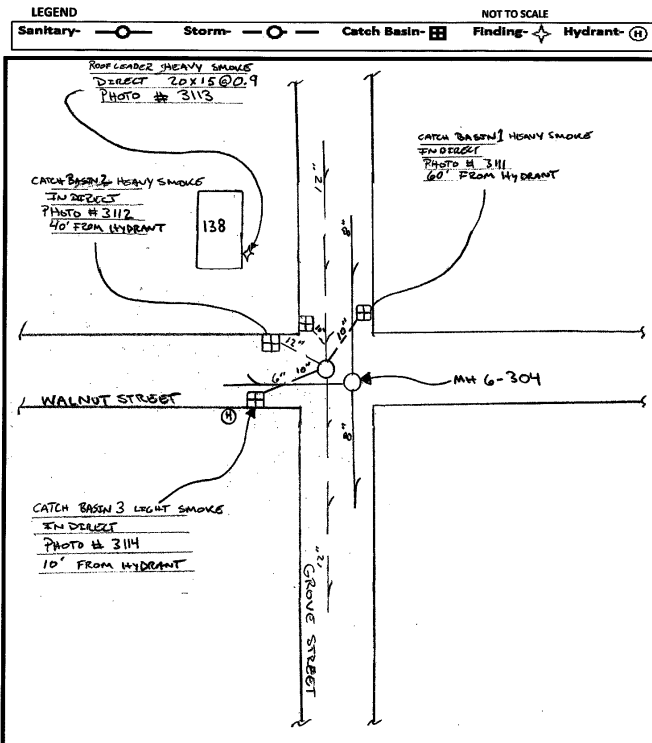
JOB: NAUGATUCK, CT

SUBAREA: 9-2

SKETCH # 6

DATE: 1/12/16

INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 9_2 Sketch 6.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

524 Church Street

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Smoke from multiple spots in lawn - direct connection

Drainage Area SqFt

0

Runoff Coeff

0



Image #: DSCN3055.JPG



SMOKE TEST FINDING

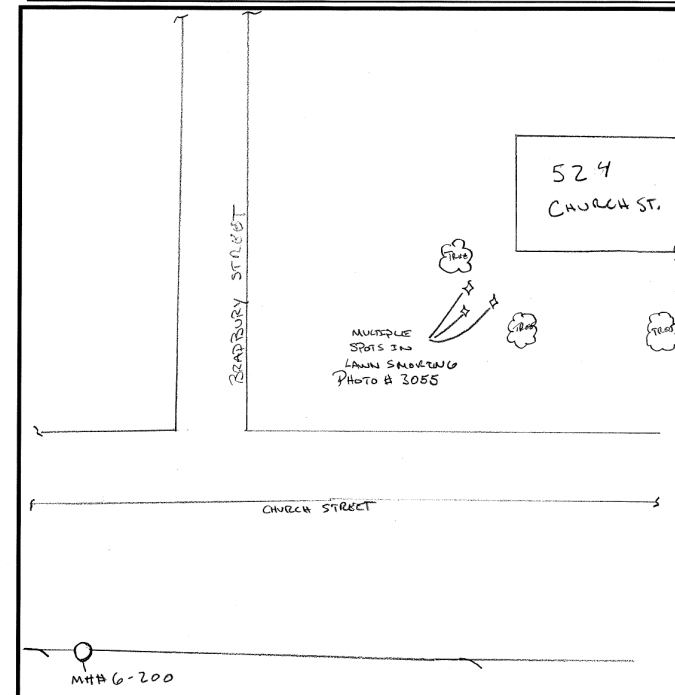
JOB: Naugatuck Ct

SUBAREA: 246

SKETCH # 2

DATE: 12/17/15 INSPECTOR: RV

LEGEND Sanitary- Storm- Catch Basin- Finding- Hydrant- NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 246 Sketch 2.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT
Finding Location:
 Golf Course off Porter Avenue

Sub-System: 246

Smoke Testing Log

Project No: 15110
Date: 12/16/2015
Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Smoke from drain manhole comes directly into MH 6-193 - direct connection	0	0

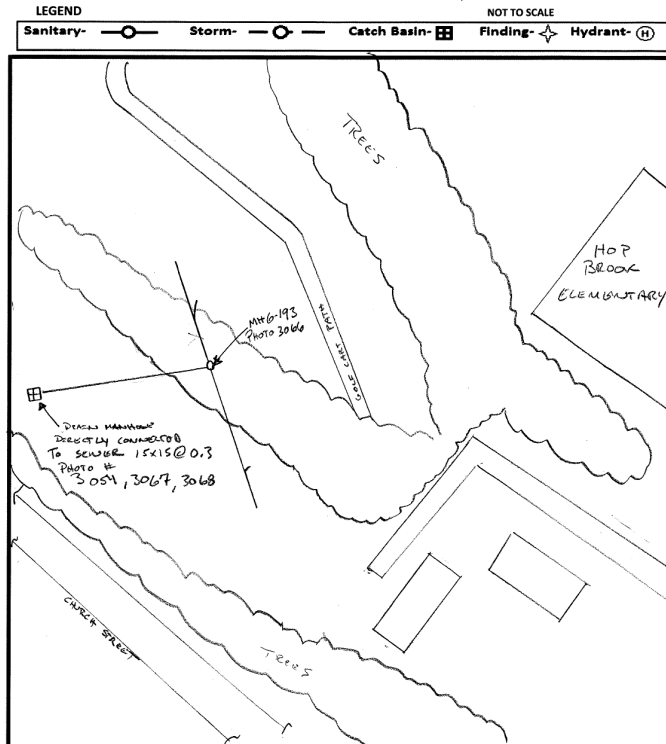


Image #: DSCN3068.JPG



SMOKE TEST FINDING

JOB: Naugatuck Ct
SUBAREA: 246 **SKETCH #** 1
DATE: 12/17/15 **INSPECTOR:** RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 246 Sketch 1.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Golf Course off Porter Avenue

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Smoke from drain manhole comes directly into MH 6-193 - direct connection

Drainage Area SqFt

0

Runoff Coeff

0



Image #: DSCN3067.JPG



SMOKE TEST FINDING

JOB: Naugatuck Ct

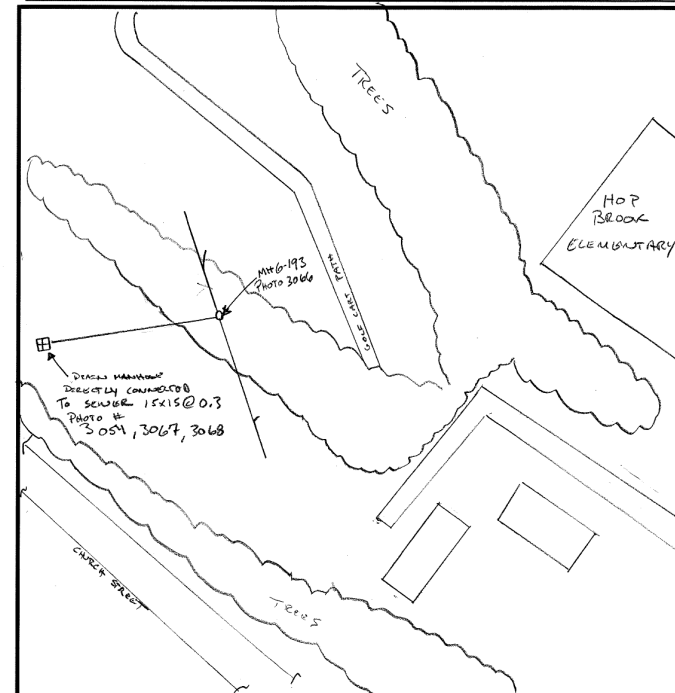
SUBAREA: 246

SKETCH # 1

DATE: 12/17/15

INSPECTOR: RV

LEGEND
 Sanitary- Storm- Catch Basin- Finding- Hydrant-
 NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 246 Sketch 1.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Golf Course off Porter Avenue

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Smoke from drain manhole comes directly into MH 6-193 - direct connection

Drainage
Area SqFt

0

Runoff
Coeff

0



Image #: DSCN3066.JPG



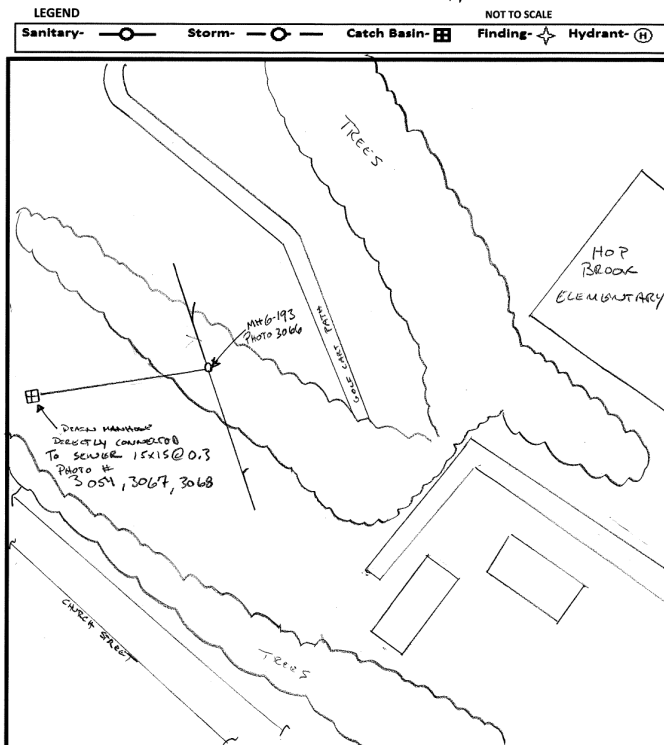
SMOKE TEST FINDING

JOB: Naugatuck Ct

SUBAREA: 246

SKETCH # 1

DATE: 12/17/15 INSPECTOR: RV



Sketch #: Naugatuck, CT Smoke Testing Subarea 246 Sketch 1.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Golf Course off Porter Avenue

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Smoke from drain manhole comes directly into MH 6-193 - direct connection

Drainage
Area SqFt

225

Runoff
Coeff

0.3



Image #: DSCN3054.JPG



SMOKE TEST FINDING

JOB: Naugatuck Ct

SUBAREA: 246

SKETCH # 1

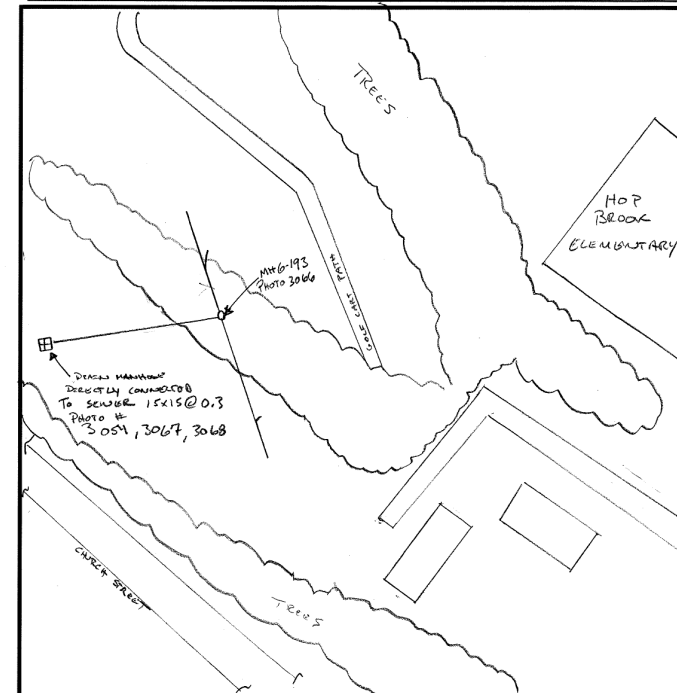
DATE: 12/17/15

INSPECTOR: RV

LEGEND

Sanitary- Storm- Catch Basin- Finding- Hydrant-

NOT TO SCALE



Sketch #: Naugatuck, CT Smoke Testing Subarea 246 Sketch 1.tif

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Porter Avenue Easement

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

MH 6-194 has a small leak, 0.01GPM, from 10" PVC pipe connection - direct connection

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3065.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

Porter Avenue Easement

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

MH 6-194 has a small leak, 0.01GPM, from 10" PVC pipe connection - direct connection

Drainage
Area SqFt

0

Runoff
Coeff

0



Image #: DSCN3064.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

421 Spring Street

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Smoke from MH 2-14, 1" below grade, in gutter line - direct connection

**Drainage
Area SqFt**

**Runoff
Coeff**



Image #: DSCN3044.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

421 Spring Street

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:

Smoke from MH 2-14, 1" below grade, in gutter line - direct connection

**Drainage
Area SqFt**

0

**Runoff
Coeff**

0



Image #: DSCN3043.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

421 Spring Street

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Smoke from MH 2-14, 1" below grade, in gutter line - direct connection	200	0.9



Image #: DSCN3042.JPG

Sketch #:

Flow Assessment Services, L.L.C.

Municipality: Naugatuck, CT

Finding Location:

550 Spring Street

Sub-System: 246

Smoke Testing Log

Project No: 15110

Date: 12/16/2015

Inspector: RV/RM

Findings:	Drainage Area SqFt	Runoff Coeff
Smoke from broken 4" PVC cleanout, 1" above grade - indirect connection	0	0



Image #: DSCN3041.JPG

Sketch #:

NAUGATUCK, CT

Dye Flood Testing Report

NAUGATUCK, CT
DYE FLOOD TESTING REPORT
DECEMBER 2015 – JANUARY 2016

NAUGATUCK, CT
DYE FLOOD TESTING

Sub System	Date	From MH	To MH	Line Section Address	Line Footage	Finding Street No	Finding Street	Findings	Drainage Area	Run-off Coeff	Image No	Sketch No	CB or Private Property (PP)	In GIS (Y) / Not In GIS (N)	Candidate for Flood Water Testing	Candidate for Dye Testing	Comments /Recommend	ID
7_93	12/7/2015	3-109	3-108	Great Hill Road Easement	281		Great Hill Road Easement	Could not locate MH 3-108	0	0								2
7_93	12/3/2015	3-119	3-118	Union City Road	235	156	Union City Road	Smoke from 4" PVC pipe - direct connection	0	0	2972	1						3
7_93	12/3/2015	3-119	3-118	Union City Road		156	Union City Road	Smoke from 4" PVC pipe - direct connection	225	0.3	2971	1	PP	House 156		Yes		4
7_93	12/3/2015	3-126	3-125	Ramsey Avenue	120		Ramsey Avenue	Map correction	0	0								5
7_93	12/3/2015	3-127	3-126	David Street	334		David Street	Map correction	0	0								6
7_93	12/3/2015	3-135	3-134	Autumn Ridge Road	185		Autumn Ridge Road and Crestwood Drive	Light smoke from catch basin - indirect connection	0	0	2973	2	CB	N(CB 3399)	Yes			7
7_93	12/3/2015	3-117.1	117.2	Tidmouth Lane	120		Tidmouth Lane	Unmapped manholes	0	0								8
7_93	12/7/2015	3-113.1	3-113	Great Hill Road	130		Great Hill Road	MH3-113.1 is an unmapped manhole	0	0								9
7_93	12/3/2015	3-117.2	117.3	Tidmouth Lane	200		Tidmouth Lane	Unmapped manholes	0	0								10
7_93	12/3/2015	3-117.3	3-117	Tidmouth Lane	168		Tidmouth Lane	MH 3-117.3 is an unmapped manhole	0	0								11
7_93	12/4/2015	4-50	4-31	Raytkwich Road	60		Raytkwich Road	Map correction	0	0								12
7_93	12/9/2015	4-81	4-80	Miller Drive	351	147	Miller Drive	Heavy smoke from driveway drain with 4" roof leader tied into driveway drain - direct connection	2553	0.9	3001	4	PP	House 147		Yes		13
7_93	12/9/2015	4-81	4-80	Miller Drive		147	Miller Drive	Heavy smoke from driveway drain with 4" roof leader tied into driveway drain - direct connection	0	0	3002	4						14
7_93	12/9/2015	4-81	4-80	Miller Drive		147	Miller Drive	Heavy smoke from driveway drain with 4" roof leader tied into driveway drain - direct connection	0	0	3004	4						15
7_93	12/9/2015	4-82	4-81	Miller Drive	93	155	Miller Drive	Heavy smoke from 4" PVC pipe, 2" above grade - indirect connection	0	0	3003	4	PP	House 155		Yes		16
7_93	12/4/2015	4-87	4-86	Union City Road	239	235	Union City Road	Light smoke from catch basin - indirect connection	0	0	2976	3	CB	N(CB 3401)	Yes			17
7_93	12/4/2015	4-88	4-87	Union City Road	209	231	Union City Road	Light smoke from catch basin - indirect connection	0	0	2974	3	CB	N(CB 3400)	Yes			18
7_93	12/4/2015	4-88	4-87	Union City Road		231	Union City Road	Light smoke from catch basin - indirect connection	0	0	2975	3						19
7_93	12/4/2015	4-98	4-96	East Waterbury Road Easement	220		East Waterbury Road Easement	Map correction	0	0								20
7_93	12/4/2015	4-109	4-108	East Waterbury Road Easement	270		East Waterbury Road Easement	Could not locate MH 4-109	0	0								21

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7_93	12/4/2015	4-109	4-108	East Waterbury Road Easement			East Waterbury Road Easement	MH 4-108 was buried 1" but is now uncovered, downhill water collects on top of manhole which has two 0.5" holes in cover	0	0	2977						Watertight Cover, raise to grade	22
7_93	12/4/2015	4-91.1	4-91.2	Union City Road	120		Union City Road	Unmapped manholes	0	0								23
7_93	12/7/2015	4-46.2	4-46.1	Raytkwich Road	259		Raytkwich Road	MH 4-46.2 is an unmapped manhole	0	0								24
7_93	12/11/2015	7-96	210	Prospect Street (Route 68)	150		Prospect Street	MH 000094 does not exist	0	0								25
7_93	12/11/2015	7-97	7-96	Prospect Street (Route 68)	50		Prospect Street	MH 212 does not exist	0	0								26
7_93	12/11/2015	7-99	7-97	Prospect Street (Route 68)	176		Prospect Street	Could not locate MH 7-98	0	0								27
7_93	12/11/2015	7-99	7-97	Prospect Street (Route 68)			Prospect Street	MH 7-98 is below grade 1" and is missing mortar in corbel - direct connection	0	0	3038	9					Manhole Rehab, raise to grade	28
7_93	12/11/2015	7-99	7-97	Prospect Street (Route 68)			Prospect Street	MH 7-97 is below grade 1" and is missing mortar in corbel - direct connection	25	0.3	3037	9					Manhole Rehab, raise to grade	29
7_93	12/10/2015	7-103	7-102	Prospect Street (Route 68)	40		Prospect Street	MH 7-103 is 1" below grade and has two 0.5" holes in cover- direct connection	100	0.9	3035						Watertight Cover, raise to grade	30
7_93	12/10/2015	7-103	7-102	Prospect Street (Route 68)			Prospect Street	MH 7-103 is 1" below grade and has two 0.5" holes in cover - direct connection	0	0	3036							31
7_93	12/10/2015	7-116	7-113	Prospect Street (Route 68) Easement	106		Prospect Street Easement	MH 7-113 has a 1 GPM leak at the pipe connection of the outgoing line	0	0	3029						Manhole Rehab	32
7_93	12/10/2015	7-116	7-113	Prospect Street (Route 68) Easement			Prospect Street Easement	MH 7-113 has a 1 GPM leak at the pipe connection of the outgoing line	0	0	3030							33
7_93	12/10/2015	7-117	912	Prospect Street (Route 68) Easement	48		Prospect Street Easement	Could not locate MH 912	0	0								34
7_93	12/10/2015	7-118	7-117	Prospect Street (Route 68) Easement	50		Prospect Street Easement	Could not locate MH 7-117	0	0								35
7_93	12/9/2015	7-122	7-121	Picture Lane	267	28	Picture Lane	Heavy smoke from three roof leaders - direct connection	0	0	3019	8	PP	House 28		Yes		36
7_93	12/9/2015	7-122	7-121	Picture Lane		28	Picture Lane	Heavy smoke from three roof leaders - direct connection	0	0	3020	8						37
7_93	12/9/2015	7-122	7-121	Picture Lane		28	Picture Lane	Heavy smoke from three roof leaders - direct connection	0	0	3018	8						38

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7_93	12/9/2015	7-122	7-121	Picture Lane		28	Picture Lane	Heavy smoke from three roof leaders - direct connection	800	0.9	3017	8						39
7_93	12/9/2015	7-123	7-122	Picture Lane	191	48	Picture Lane	Medium smoke coming from ground right above sewer line	900	0.3	3021	8					Line Sewer	40
7_93	12/9/2015	7-123	7-122	Picture Lane		48	Picture Lane	Medium smoke coming from ground right above sewer line	0	0	3022	8						41
7_93	12/9/2015	7-123	7-122	Picture Lane		67	Carolyn Circle	Heavy smoke from front left roof leader - direct connection	200	0.9	3025	8	PP	House 67		Yes		42
7_93	12/9/2015	7-123	7-122	Picture Lane		52	Carolyn Circle	Heavy smoke from front left roof leader - direct connection	225	0.9	3024	8						43
7_93	12/9/2015	7-123	7-122	Picture Lane		52	Picture Lane	Heavy smoke from front right roof leader - direct connection	225	0.9	3023	8	PP	House 52		Yes		44
7_93	12/9/2015	7-124	7-121	Carolyn Circle	297	10	Carolyn Circle	Light smoke from sidewalk - indirect connection			3028	8					Line Sewer	45
7_93	12/9/2015	7-124	7-121	Carolyn Circle		10	Carolyn Circle	Heavy smoke from disconnected roof leader with pipe entering ground - direct connection	25	0.3	3027	8	PP	House 10		Yes		46
7_93	12/9/2015	7-124	7-121	Carolyn Circle		8	Carolyn Circle	Heavy smoke from rear left roof leader - direct connection	280	0.9	3026	8	PP	House 8		Yes		47
7_93	12/9/2015	7-135	7-128	Locust Street	242	26	Locust Street	Heavy smoke from left front roof leader - direct connection	0	0	3016	7						48
7_93	12/9/2015	7-135	7-128	Locust Street		26	Locust Street	Heavy smoke from left front roof leader - direct connection	150	0.9	3015	7	PP	House 26		Yes		49
7_93	12/9/2015	7-151	7-150	Wooster Street	92	111	Wooster Street Building 5	Light smoke from sidewalk - indirect connection	0	0	3012	6					Line Sewer	50
7_93	12/9/2015	7-151	7-150	Wooster Street		111	Wooster Street Building 5	Light smoke from sidewalk - indirect connection	0	0	3014	6						51
7_93	12/9/2015	7-151	7-150	Wooster Street		111	Wooster Street Building 5	Light smoke from sidewalk - indirect connection	0	0	3013	6						52
7_93	12/9/2015	7-167	7-163	Cold Spring Circle	370	117	Cold Spring Circle	Heavy smoke from 8" VCP pipe in catch basin - direct connection	150	0.9	3005	5	CB	Spring Circle (on GIS, appears to be CB 2374 and House 115 by Bing Search)		Yes		53

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7_93	12/9/2015	7-167	7-163	Cold Spring Circle		117	Cold Spring Circle	Heavy smoke from 8" VCP pipe in catch basin - direct connection	0	0	3010	5						54
7_93	12/9/2015	7-167	7-163	Cold Spring Circle		117	Cold Spring Circle	Heavy smoke from 8" VCP pipe in catch basin - direct connection	0	0	3009	5						55
7_93	12/9/2015	7-167	7-163	Cold Spring Circle		117	Cold Spring Circle	Heavy smoke from 8" VCP pipe in catch basin - direct connection	0	0	3008	5						56
7_93	12/11/2015	7-250	7-99.1	Lines Hill Street	401		Lines Hill Street	MH 7-99.1 is paved over	0	0							Unbury Manhole	57
7_93	12/11/2015	7-253	7-252	Eagle Street	138		Eagle Street	MH 7-252 is in gutter line and has two 0.5" holes in cover - direct connection	0	0	3040	9						58
7_93	12/11/2015	7-253	7-252	Eagle Street			Eagle Street	MH 7-252 is in gutter line and has two 0.5" holes in cover - direct connection	50	0.9	3039	9					Watertight Cover	59
7_93	12/11/2015	7-99.1	7-99	Prospect Street (Route 68)	45		Prospect Street	Map correction	0	0		9						60
7_93	12/11/2015	7-99.1	7-99	Prospect Street (Route 68)			Prospect Street	MH 7-99.1 is an unmapped manhole	0	0								61
7_93	12/9/2015	7-108.1	000174	Picture Lane	110		Picture Lane	MH 7-108.1 is unmapped and has two outgoing lines. One outgoing line goes to MH XXXX000174 and the other is going out to MH 7-108.	0	0								62
7_93	12/9/2015	7-108.1	000174	Picture Lane			Picture Lane	MH 7-108.1 is 2" below grade with 27 0.5" holes in cover	25	0.9	3034						Watertight Cover, Raise to grade	63
7_93	12/3/2015	000310	3-126	David Street	126		David Street	Could not locate MH 000310	0	0								64
7_93	12/10/2015	912	7-116	Prospect Street (Route 68) Easement	51		Prospect Street Easement	MH 7-116 is buried 6" with two 0.5" holes in cover	0	0	3033						Watertight Cover, Raise to grade	65
7_93	12/10/2015	912	7-116	Prospect Street (Route 68) Easement			Prospect Street Easement	MH 7-116 is buried 6" with two 0.5" holes in cover	0	0	3032							66
7_93	12/10/2015	912	7-116	Prospect Street (Route 68) Easement			Prospect Street Easement	MH 7-116 is buried 6" with two 0.5" holes in cover	100	0.3	3031							67
7_93	12/11/2015	922	922.1	Prospect Street (Route 68)	30		Prospect Street	MH 922.1 is an unmapped manhole	0	0								68
7_93	12/11/2015	922	922.1	Prospect Street (Route 68)			Prospect Street	Map correction	0	0		9						69
7_93	12/11/2015	922.1	7-96	Prospect Street (Route 68)	185		Prospect Street	Map correction	0	0		9						70

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7_93	12/7/2015	1160	1161	Raytkwich Road Easement	85		Raytkwich Road Easement	Map correction. No apparent flow infiltration because corbel is above grade, but has missing mortar where frame and corbel meet for MH1160, MH1161 and MH1162.	0	0							Manhole Rehab	71
7_93	12/7/2015	1161	1162	Raytkwich Road Easement	70		Raytkwich Road Easement	Map correction	0	0								72
7_93	12/7/2015	1162	1162.1	Raytkwich Road Easement	68		Raytkwich Road Easement	MH 1162.1 is an unmapped manhole	0	0								73
7_93	12/7/2015	1162.1	4-46.2	Raytkwich Road Easement	31		Raytkwich Road Easement	MH 4-46.2 is an unmapped manhole	0	0								74
7_93	12/10/2015	2084	7-118	Prospect Street (Route 68) Easement	108		Prospect Street	Could not locate MH 7-118	0	0								75
7_93	12/3/2015	2130	2130.1	Brittany Lane	126		Brittany Lane	MH 2130.1 is an unmapped manhole	0	0								76
7_93	12/3/2015	2133	2136	Marsh Hill Road	129		Marsh Hill Road	Map correction	0	0								77
7_93	12/3/2015	2142	2130	Brittany Lane	129		Brittany Lane	Map correction	0	0								78
7_93	12/3/2015	2297	2128	Brittany Lane	76		Brittany Lane	Map correction	0	0								79
7_93	12/3/2015	2435	2435.1	Marsh Hill Road	165		7 Brittany Lane	Map correction - MH 2435 does not connect to MH 2133, but instead connects to an unmapped manhole behind 7 Brittany Lane (MH 2435.1)	0	0								80
7_93	12/3/2015	2436	2141	Brittany Lane at Marsh Hill Road	190		Brittany Lane at Marsh Hill Road	Map correction - MH 2141 is located across from Marsh Hill Road in grass of property 8 Brittany Lane	0	0								81
9_2	12/16/2015	5-74	5-73	Jones Road Easement	339		Jones Road Easement	Smoke from MH 5-73, 1" below grade, near wetlands - direct connection	0	0	3047						Watertight Cover	82
9_2	12/16/2015	5-75	5-74	Jones Road Easement	341		Jones Road Easement	Smoke from MH 5-74, missing corbel, near wetlands - direct connection	0	0	3046						Watertight Cover, Manhole rehab	83
9_2	12/16/2015	5-89	5-88	Stone Fence Road Easement	393		Stone Fence Road Easement	Map correction	0	0								84
9_2	12/16/2015	5-90	5-89	Stone Fence Road Easement	330		Stone Fence Road Easement	Map correction	0	0								85

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9_2	12/16/2015	5-92	5-91	Stone Fence Road	307	273	Stone Fence Road	Smoke from broken cleanout at grade- direct connection	0	0	3049						Repair cleanout	86
9_2	12/16/2015	5-94	5-93	Stone Fence Road	195	263	Stone Fence Road	Smoke from broken cleanout direct connection	0	0	3048						Repair cleanout	87
9_2	1/4/2016	5-115	6-7	Neumann Street	75		Neumann Street	Map correction	0	0								88
9_2	1/4/2016	6-1A	6-1A.1	Rubber Avenue	267	648	Rubber Avenue	Light smoke from catch basin - indirect connection	0	0	3145	20	PP	house 648	Yes			89
9_2	1/4/2016	6-1A	6-1A.1	Rubber Avenue		648	Rubber Avenue	MH 6-1A.1 is an unmapped manhole	0	0								90
9_2	1/7/2016	6-149	6-148	Dunn Avenue	337	41	Dunn Avenue	Light smoke from catch basin (1) - indirect connection	0	0	3120	9	CB	Y (#652)	Yes			91
9_2	1/7/2016	6-149	6-148	Dunn Avenue		41	Dunn Avenue	Light smoke from catch basin (2) - indirect connection	0	0	3121	9	CB	Y(#653)	Yes			92
9_2	1/7/2016	6-159	6-158	Park Avenue	310		Park Avenue	Map correction	0	0								93
9_2	1/7/2016	6-161	6-160	Walnut Street	532	70	Walnut Street	Heavy smoke from retaining wall and multiple spots on lawn - direct connection	100	0.3	3116	8	PP	House 70		Yes		94
9_2	1/7/2016	6-161	6-160	Walnut Street		70	Walnut Street	Heavy smoke from retaining wall and multiple spots on lawn - direct connection	0	0	3118	8						95
9_2	1/7/2016	6-161	6-160	Walnut Street		70	Walnut Street	Heavy smoke from retaining wall and multiple spots on lawn - direct connection	0	0	3117	8						96
9_2	1/7/2016	6-171	171.1	Quinn Street	125	42	Quinn Street	MH 6-171.1 is an unmapped manhole	0	0								97
9_2	1/7/2016	6-171	171.1	Quinn Street		42	Quinn Street	Light smoke from catch basin - indirect connection	0	0	3115	7	CB	Y (#620)	Yes			98
9_2	1/7/2016	6-178	178.1	Hillside Avenue	97		Hillside Avenue	MH 6-178.1 is an unmapped manhole	0	0								99
9_2	1/7/2016	9-181	9-180	Trowbridge Place	321		Trowbridge Place near Nettleton Avenue	Light smoke from catch basin (1) - indirect connection	0	0	3132	13	CB	Y(#664)	Yes			100
9_2	1/7/2016	9-181	9-180	Trowbridge Place			Trowbridge Place near Nettleton Avenue	Light smoke from catch basin (3) - indirect connection	0	0	3134	13	CB	Y(#2470)	Yes			101
9_2	1/7/2016	9-181	9-180	Trowbridge Place			Trowbridge Place near Nettleton Avenue	Map correction	0	0								102
9_2	1/7/2016	9-181	9-180	Trowbridge Place			Trowbridge Place near Nettleton Avenue	Light smoke from catch basin (2) - indirect connection	0	0	3133	13	CB	Y(#2469)	Yes			103

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9_2	1/7/2016	9-182	9-180	Trowbridge Place	243	114/115	Trowbridge Place	Heavy smoke from 4" VCP pipe in ground - direct connection	4	0.3	3131	13	PP	On map as 116 (Bing shows house 114/115)		Yes		104
9_2	1/6/2016	6-305	6-304	Grove Street	295		Walnut Street at Grove Street	Heavy smoke from catch basin (1) - indirect connection	0	0	3111	6	CB	Y(#357)	Yes			105
9_2	1/6/2016	6-305	6-304	Grove Street			Walnut Street at Grove Street	Heavy smoke from catch basin (2) - indirect connection	0	0	3112	6	CB	Y(#359)	Yes			106
9_2	1/6/2016	6-305	6-304	Grove Street			Walnut Street at Grove Street	Light smoke from catch basin (3) - indirect connection	0	0	3114	6	CB	Y(#360)	Yes			107
9_2	1/6/2016	6-306	6-305	Grove Street	366		Grove Street at May Avenue	Light smoke from catch basin (1) - indirect connection	0	0	3108	5	CB	Y(#1755)	Yes			108
9_2	1/6/2016	6-306	6-305	Grove Street			Grove Street at May Avenue	Light smoke from catch basin (2) - indirect connection	0	0	3109	5	CB	Y(#1754)	Yes			109
9_2	1/6/2016	6-306	6-305	Grove Street			Grove Street at May Avenue	Light smoke from catch basin (3) - indirect connection	0	0	3110	5	CB	Y(#1752)	Yes			110
9_2	1/6/2016	6-320	6-305	Walnut Street	355	138	Walnut Street	Smoke from roof leader - direct connection	300	0.9	3113	6	PP	N(House 138)		Yes		111
9_2	1/7/2016	6-161.1	6-161	Walnut Street	226	70	Walnut Street	Light smoke from catch basin - indirect connection	0	0	3119	8	CB	Y(#1743)	Yes			112
9_2	1/6/2016	9-12A	9-11	Rubber Avenue	210	219	Rubber Avenue	Light smoke from catch basin in driveway - indirect connection	0	0	3141	16	PP	house 219	Yes			113
9_2	1/5/2016	9-116	9-115	Scott Street	385	198	Scott Street	Heavy smoke from roof leader - direct connection	750	0.9	3143	18	PP	N(House 198)		Yes		114
9_2	1/5/2016	9-119	9-118	Manners Avenue	140	100	Manners Avenue	Heavy smoke from catch basin at end of driveway - direct connection	5200	0.9	3144	19	CB	N(end of house 100 driveway; labeled as 3402)		Yes		115
9_2	1/5/2016	9-125	9-125.1	Melbourne Street	113		Melbourne Street	MH 9-125.1 is an unmapped manhole	0	0								116
9_2	1/4/2016	9-146	9-136	Melbourne Street	182	79	Melbourne Street	Heavy smoke from 4" PVC pipe in ground - direct connection	24	0.9	3142	17	PP	house 79		Yes		117
9_2	1/7/2016	9-176	9-176.1	Leclair Circle	249		Leclair Circle	MH 9-176.1 is an unmapped manhole	0	0								118
9_2	1/7/2016	9-179	9-178.1	Moore Avenue	25		Moore Avenue	MH 9-178.1 is an unmapped manhole	0	0								119
9_2	1/7/2016	9-185	6-148.2	Highland Avenue	310		Highland Avenue	MH 6-148.2 is an unmapped manhole	0	0								120

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9_2	1/8/2016	9-193	9-192	Fairveiv Avenue	167		Pleasant View Street at Fairview Avenue	Light smoke from catch basin (1) - indirect connection	0	0	3138	15	CB	Y(#248)	Yes			121
9_2	1/8/2016	9-193	9-192	Fairveiv Avenue			Pleasant View Street at Fairview Avenue	Light smoke from catch basin (2) - indirect connection	0	0	3139	15	CB	Y(#246)	Yes			122
9_2	1/7/2016	9-202	9-190	Cliff Street	76	80	Cliff Street	Heavy smoke from retaining wall - direct connection	25	0.3	3130	12	PP	N(House 80)		Yes		123
9_2	1/7/2016	9-210	9-209	Highland Avenue	169	39	Highland Avenue	Heavy smoke from 4" PVC pipe in ground - direct connection	0	0	3123	10						124
9_2	1/7/2016	9-210	9-209	Highland Avenue		39	Highland Avenue	Heavy smoke from 4" PVC pipe in ground - direct connection	24	0.9	3122	10	PP	N(House 39)		Yes		125
9_2	1/8/2016	9-158.1	9-158	Nettleton Avenue	530		Nettleton Avenue	MH 9-158.1 is an unmapped manhole	0	0								126
9_2	1/7/2016	9-178.1	9-178	Lynn Road	156	10	Lynn Road	Heavy smoke from 2 roof leaders - direct connection	0	0	3137	14						127
9_2	1/7/2016	9-178.1	9-178	Lynn Road		10	Lynn Road	Heavy smoke from 2 roof leaders - direct connection	1050	0.9	3136	14	PP	N(house 10)		Yes		128
9_2	1/7/2016	9-189.1	9-189	Pleasant View Street	158		Pleasant View Street	MH 9-189.1 is an unmapped manhole	0	0								129
9_2	1/7/2016	9-178.3	9-179	Moore Avenue	457		Moore Avenue at Lynn Road	Light smoke from catch basin - indirect connection	0	0	3135	14	CB	Y(#1619)	Yes			130
9_2	1/6/2016	000144	6-300	New Street	249	72	New Street	Light smoke form catch basin - indirect connection	0	0	3097	2	CB	Y(#347)	Yes			131
9_2	1/6/2016	000145	4	Svea Avenue	257	64	New Street	Light smoke from catch basin - indirect connection	0	0	3098	2	CB	Y(#348)	Yes			132
9_2	12/16/2015	340	5-77	Jones Road Easement	223		Jones Road Easement	Map correction	0	0								133
9_2	12/16/2015	340	5-77	Jones Road Easement			Jones Road Easement	Could not locate MH 5-78	0	0								134
9_2	1/6/2016	678	678.1	May Avenue	153		May Avenue at New Street	Light smoke from catch basin (3) - indirect connection	0	0	3106	4	CB	Y(#1759)	Yes			135
9_2	1/6/2016	678	678.1	May Avenue	153		May Avenue at New Street	Light smoke from catch basin (4) - indirect connection	0	0	3107	4	CB	Y(#1760)	Yes			136
9_2	1/6/2016	678	678.1	May Avenue			May Avenue at New Street	Light smoke from catch basin (2) - indirect connection	0	0	3105	4	CB	Y(#1761)	Yes			137
9_2	1/6/2016	678	678.1	May Avenue			May Avenue at New Street	Light smoke from catch basin (1) - indirect connection	0	0	3104	4	CB	Y(#1762)	Yes			138
9_2	1/6/2016	678.1	6-314	New Street	397	107	New Street	Light smoke from catch basin - indirect connection	0	0	3100	3						139
9_2	1/6/2016	678.1	6-314	New Street		107	New Street	Light smoke from catch basin - indirect connection	0	0	3099	3						140

NAUGATUCK, CT
DYE FLOOD TESTING

Sub System	Date	From MH	To MH	Line Section Address	Line Footage	Finding Street No	Finding Street	Findings	Drainage Area	Run-off Coeff	Image No	Sketch No	CB or Private Property (PP)	In GIS (Y) / Not In GIS (N)	Candidate for Flood Water Testing	Candidate for Dye Testing	Comments /Recommend	ID
9_2	1/6/2016	679	678.1	New Street	170		New Street	MH 678.1 is an unmapped manhole	0	0								141
9_2	1/8/2016	1128.1	1128	Beebe Street	316		Beebe Street	MH 1128.1 is an unmapped manhole	0	0								142
9_2	1/8/2016	1151.2	1151.1	Goodyear Avenue	323		Goodyear Avenue	Unmapped manholes	0	0								143
9_2	1/4/2016	1241.1	1241	Field Street	118		Field Street	MH 1241.1 is an unmapped manhole	0	0								144
9_2	12/16/2015	1273	5-92	Stone Fence Road	457	303	Stone Fence Road	Medium smoke from catch basin - indirect connection	0	0	3052		CB	Y(#1137) - See Sketch: (9 2 #1)	Yes			145
9_2	12/16/2015	1273	5-92	Stone Fence Road		303	Stone Fence Road	Medium smoke from catch basin - indirect connection	0	0	3053							146
9_2	12/16/2015	1273	5-92	Stone Fence Road		303	Stone Fence Road	Medium smoke from catch basin - indirect connection	0	0	3058							147
9_2	12/16/2015	1273	5-92	Stone Fence Road		303	Stone Fence Road	Medium smoke from catch basin - indirect connection	0	0	3061							148
9_2	12/16/2015	1273	5-92	Stone Fence Road		303	Stone Fence Road	Medium smoke from catch basin - indirect connection	0	0	3063							149
9_2	12/16/2015	1273	5-92	Stone Fence Road		303	Stone Fence Road	Medium smoke from catch basin - indirect connection	0	0	3051							150
9_2	12/16/2015	1273	5-92	Stone Fence Road		303	Stone Fence Road	Medium smoke from catch basin - indirect connection	0	0	3062							151
9_2	1/7/2016	2423	2423.2	Meadow Street	139		Meadow Street	MH 2423.2 is an unmapped manhole	0	0								152
9_2	1/7/2016	2423	2423.2	Meadow Street			Meadow Street	Map correction	0	0								153
9_2	1/7/2016	2427	2427.1	Walnut Terrace	25	2	Park Avenue	Light smoke from catch basin (1) - indirect connection	0	0	3126	11	CB	Y(#649)	Yes			154
9_2	1/7/2016	2427	2427.1	Walnut Terrace		2	Park Avenue	Light smoke from catch basin (2) - indirect connection	0	0	3127	11	CB	Y(#650)	Yes			155
9_2	1/7/2016	2427.1	6-156	Walnut Terrace	155	2	Park Avenue	Heavy smoke from crack in driveway - direct connection	9	0.9	3125	11					Line sewer	156
9_2	12/16/2015	2472.1	2472	Stone Fence Road	170		Stone Fence Road	Unmapped manholes	0	0								157
9_2	12/16/2015	2472.2	2472.1	Stone Fence Road	132		Stone Fence Road	Unmapped manholes	0	0								158
9_2	12/16/2015	2472.3	2472.2	Stone Fence Road	240		Stone Fence Road	Unmapped manholes	0	0								159
10_198	1/11/2016	10-200	200.1	Water Street	324		Water Street	MH 10-200.1 is an unmapped manhole	0	0								160
246	12/16/2015	2-1	1131	Porter Avenue Easement	196		Porter Avenue Easement	Could not locate MH 1131	0	0								161
246	12/16/2015	2-1	1131	Porter Avenue Easement			Porter Avenue Easement	MH 2-1 has a 10" PVC line, possibly a drain line, coming in from the West	0	0			MH	Y(select 2 1)		Yes		162

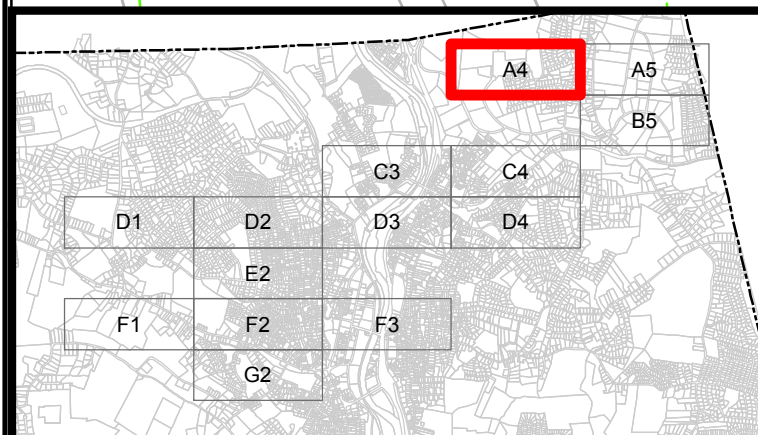
NAUGATUCK, CT
DYE FLOOD TESTING

Sub System	Date	From MH	To MH	Line Section Address	Line Footage	Finding Street No	Finding Street	Findings	Drainage Area	Run-off Coeff	Image No	Sketch No	CB or Private Property (PP)	In GIS (Y) / Not In GIS (N)	Candidate for Flood Water Testing	Candidate for Dye Testing	Comments /Recommend	ID	
246	12/16/2015	2-2	2-1	Porter Avenue Easement	190		Porter Avenue Easement	Map correction	0	0								163	
246	12/16/2015	2-14	2-12	Spring Street	56	421	Spring Street	Smoke from MH 2-14, 1" below grade, in gutter line - direct connection	200	0.9	3042							Watertight Cover, raise to grade	164
246	12/16/2015	2-14	2-12	Spring Street		421	Spring Street	Smoke from MH 2-14, 1" below grade, in gutter line - direct connection	0	0	3044							165	
246	12/16/2015	2-14	2-12	Spring Street		421	Spring Street	Smoke from MH 2-14, 1" below grade, in gutter line - direct connection	0	0	3043							166	
246	12/16/2015	6-192	7-30	North Church Street Easement (Route 63)	156		North Church Street Easement	Manholes are in the river	0	0								Relocate Manholes or Rehab	167
246	12/16/2015	6-193	6-192	North Church Street Easement (Route 63)	262		Golf Course off Porter Avenue	Smoke from drain manhole comes directly into MH 6-193 - direct connection	0	0	3068	1						168	
246	12/16/2015	6-193	6-192	North Church Street Easement (Route 63)			Golf Course off Porter Avenue	Smoke from drain manhole comes directly into MH 6-193 - direct connection	0	0	3067	1						169	
246	12/16/2015	6-193	6-192	North Church Street Easement (Route 63)			Golf Course off Porter Avenue	Smoke from drain manhole comes directly into MH 6-193 - direct connection	225	0.3	3054	1	MH	Select 6-193		Yes	Selected 6-193 Sewer Manhole on GIS. Abandon or relocate drain	170	
246	12/16/2015	6-193	6-192	North Church Street Easement (Route 63)			Golf Course off Porter Avenue	Smoke from drain manhole comes directly into MH 6-193 - direct connection	0	0	3066	1						171	
246	12/16/2015	6-194	6-193	Porter Avenue Easement	309		Porter Avenue Easement	MH 6-194 has a small leak, 0.01GPM, from 10" PVC pipe connection - direct connection	0	0	3065							172	
246	12/16/2015	6-194	6-193	Porter Avenue Easement			Porter Avenue Easement	MH 6-194 has a small leak, 0.01GPM, from 10" PVC pipe connection - direct connection	0	0	3064							173	
246	12/16/2015	6-195	6-194	Porter Avenue Easement	210		Porter Avenue Easement	Map correction	0	0								174	
246	12/16/2015	6-197	690	Porter Avenue Easement	147		Porter Avenue Easement	Could not locate MH 690	0	0								175	
246	12/16/2015	6-197	690	Porter Avenue Easement			Porter Avenue Easement	Map correction	0	0								176	

NAUGATUCK, CT
DYE FLOOD TESTING

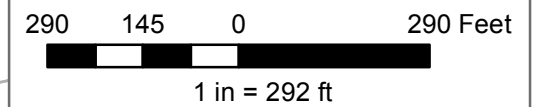
Sub System	Date	From MH	To MH	Line Section Address	Line Footage	Finding Street No	Finding Street	Findings	Drainage Area	Run-off Coeff	Image No	Sketch No	CB or Private Property (PP)	In GIS (Y) / Not In GIS (N)	Candidate for Flood Water Testing	Candidate for Dye Testing	Comments /Recommend	ID		
246	12/16/2015	6-200	6-192	North Church Street Easement (Route 63)	280		North Church Street Easement	MH 6-192 is in the river	0	0							Relocate or rehab manhole	177		
246	12/16/2015	6-201	6-200	North Church Street (Route 63)	234	524	Church Street	Smoke from multiple spots in lawn - direct connection	0	0	3055	2	PP	y (#524 Church street)		Yes		178		
246	12/16/2015	7-10	246	North Church Street Easement (Route 63)	380		North Church Street Easement	MH 7-10 is in the river	0	0							Relocate or rehab manhole	179		
246	12/16/2015	7-11	7-10	North Church Street Easement (Route 63)	508		North Church Street Easement	Manholes are in the river	0	0							Relocate or rehab manhole	180		
246	12/16/2015	7-30	7-11	North Church Street Easement (Route 63)	395		North Church Street Easement	Manholes are in the river	0	0							Relocate or rehab manhole	181		
246	12/16/2015	690	6-195	Porter Avenue Easement	216		Porter Avenue Easement	Map correction	0	0								182		
246	12/16/2015	1131	6-197	Porter Avenue Easement	273		Porter Avenue Easement	Map correction	0	0								183		
246	12/16/2015	1131	6-197	Porter Avenue Easement			Porter Avenue Easement	Could not locate MH 000110	0	0								184		
246	12/16/2015	1132	1132.1	Spring Street	326	550	Spring Street	Smoke from broken 4" PVC cleanout, 1" above grade - indirect connection	0	0	3041						Repair cleanout	185		
246	12/16/2015	1132.1	1132.2	Spring Street	465		Spring Street	Unmapped manholes	0	0								186		
															Subtotal	30	22			
															Unit cost	\$ 350.00	\$ 110.00			
															Total Cost	\$ 10,500.00	\$ 2,420.00	\$ 12,920.00		

NAUGATUCK, CT
DYE FLOOD TESTING REPORT
REVISED MAPS



Legend

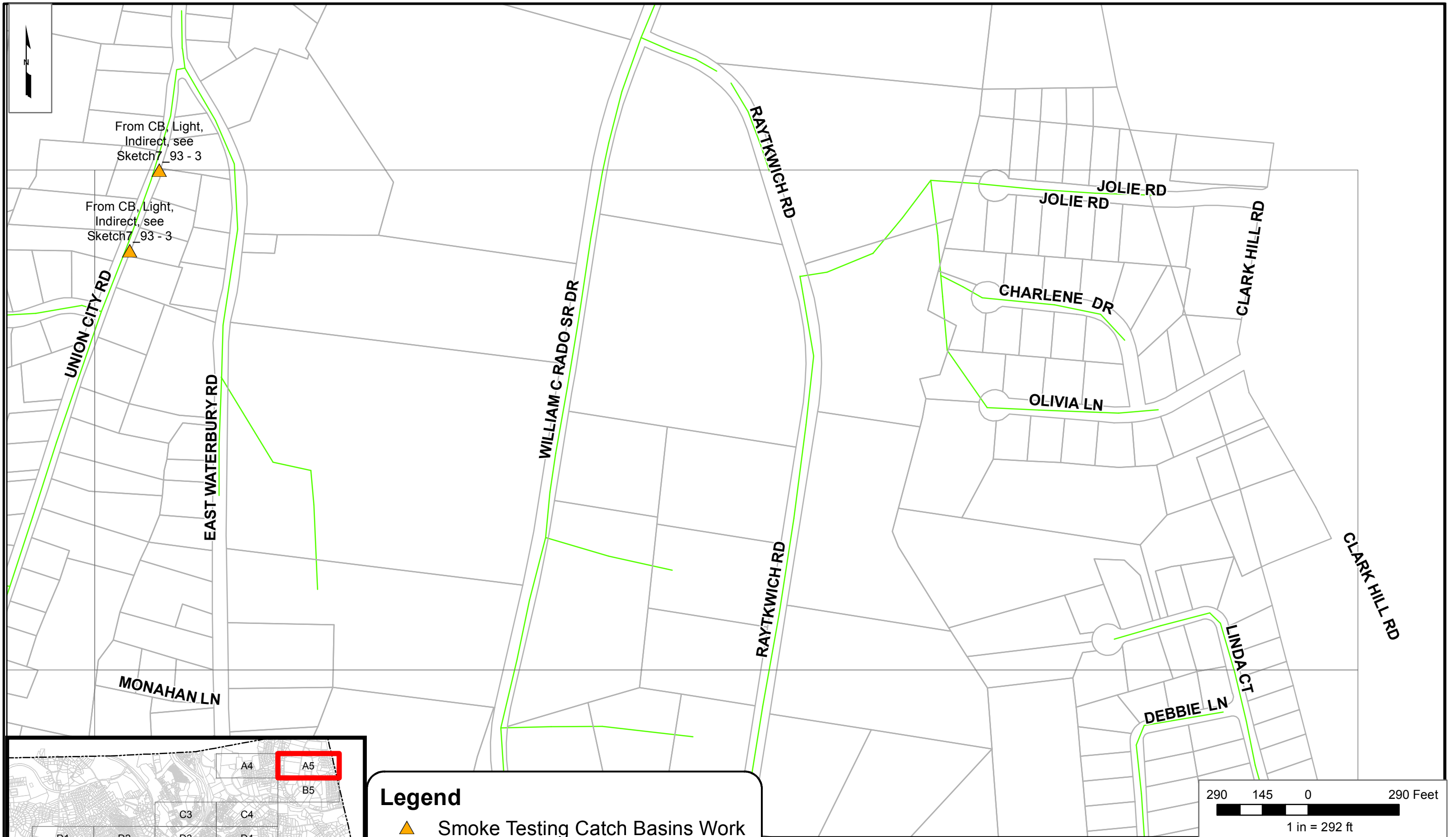
- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels







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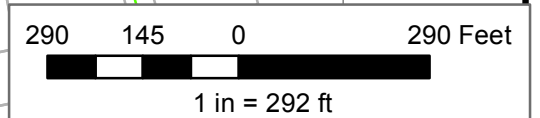
Dye Testing 2016

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 Naugatuck, CT
 Building Inspections 1



Legend

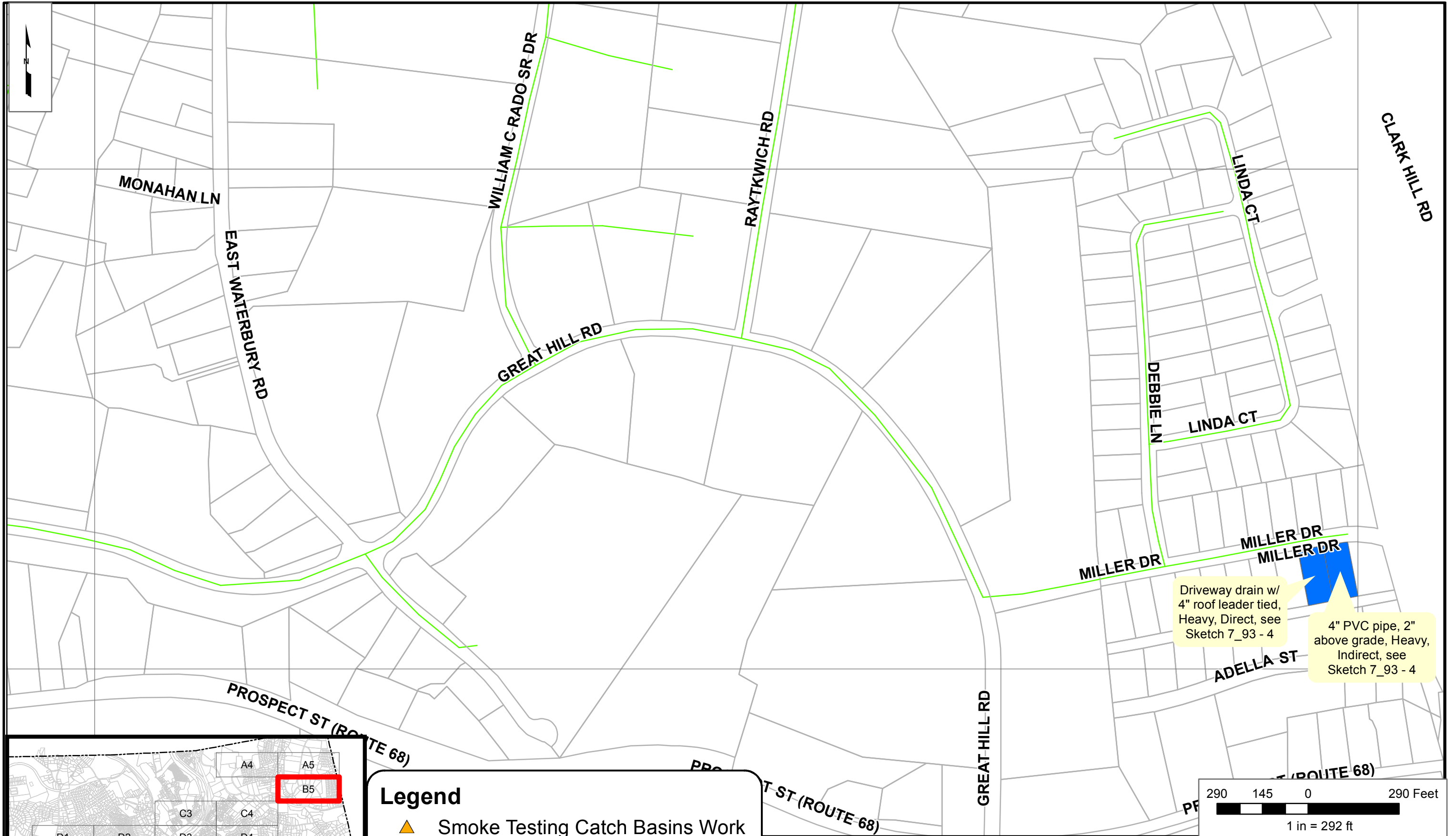
-  Smoke Testing Catch Basins Work
-  Smoke Testing Manhole Work
-  Smoke Testing Private Property Work
-  Naugatuck_Parcels




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Naugatuck, CT
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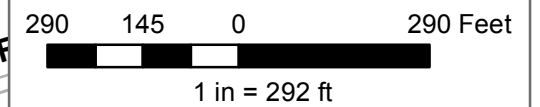
Driveway drain w/
4" roof leader tied,
Heavy, Direct, see
Sketch 7_93 - 4

4" PVC pipe, 2"
above grade, Heavy,
Indirect, see
Sketch 7_93 - 4



Legend

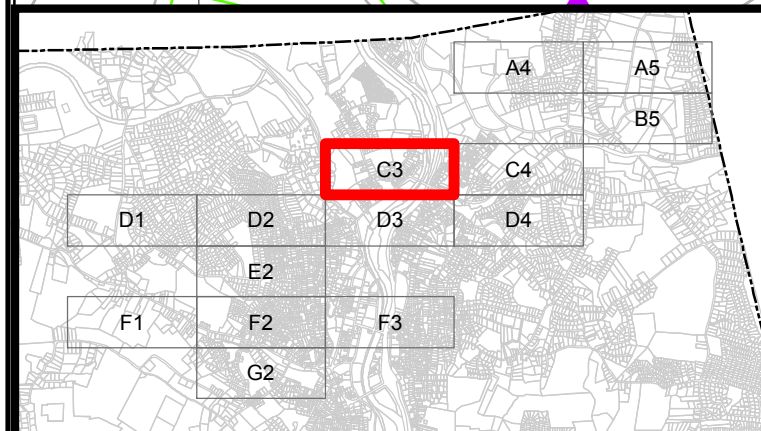
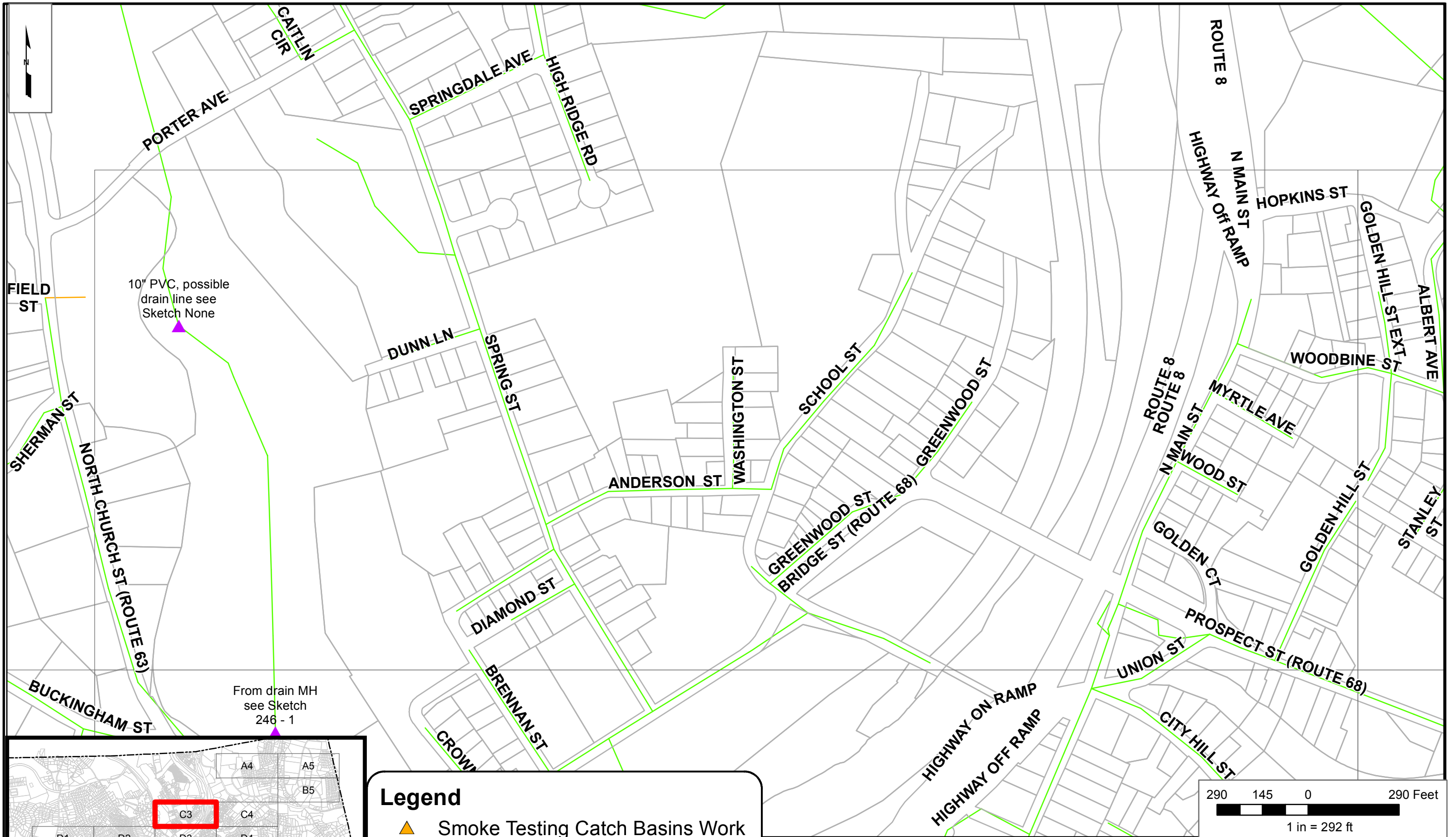
- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels







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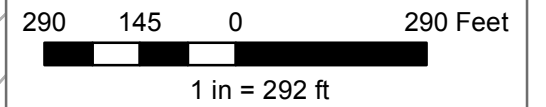
Dye Testing 2016

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Naugatuck, CT
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Legend

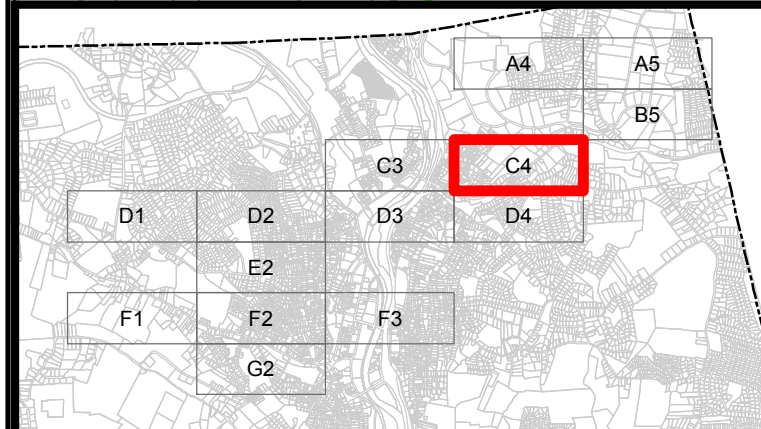
-  Smoke Testing Catch Basins Work
-  Smoke Testing Manhole Work
-  Smoke Testing Private Property Work
-  Naugatuck_Parcels




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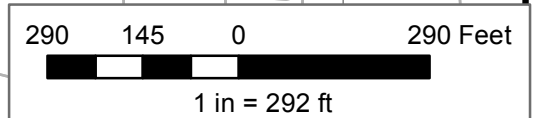
Dye Testing 2016

SSES Phase 1
Naugatuck, CT
Building Inspections 1



Legend

- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels



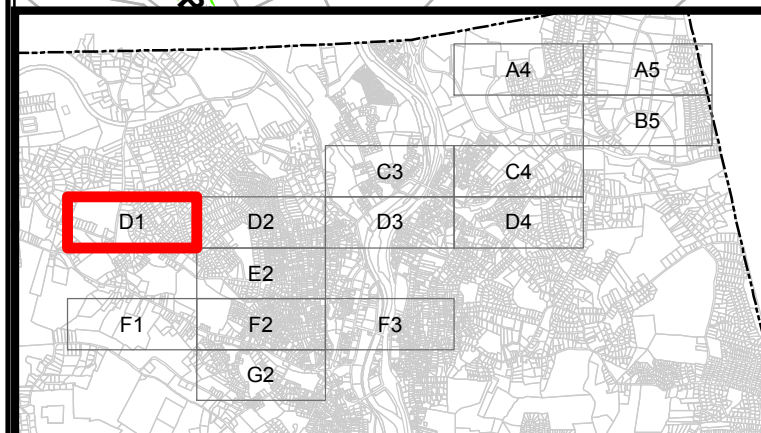
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Naugatuck, CT
Building Inspections 1

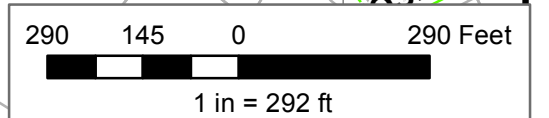


From CB, Medium, Indirect, see SketchNone



Legend

- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels

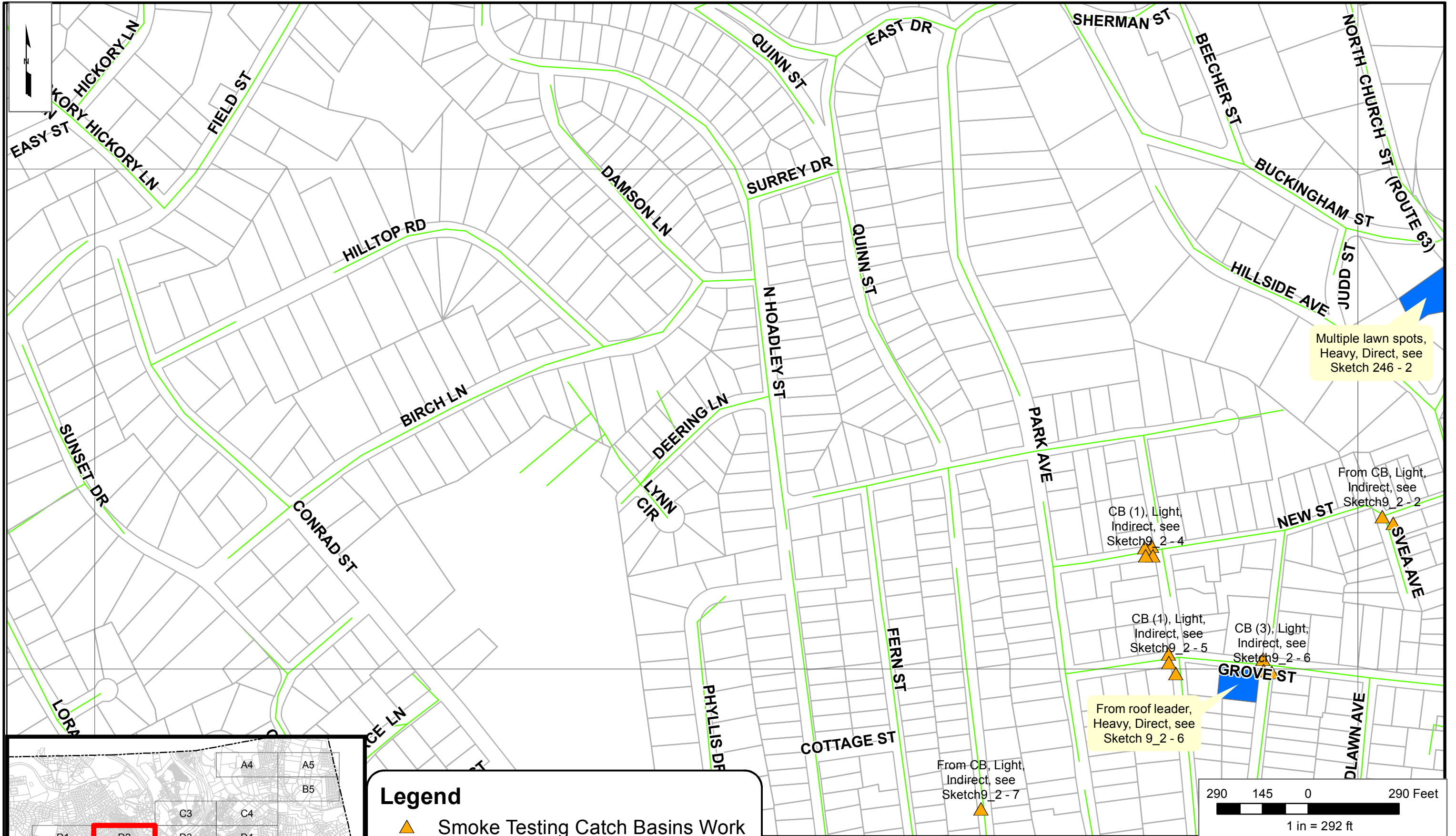


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Naugatuck, CT
Building Inspections 1

Figure
D1
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Multiple lawn spots,
Heavy, Direct, see
Sketch 246 - 2

CB (1), Light,
Indirect, see
Sketch9_2 - 4

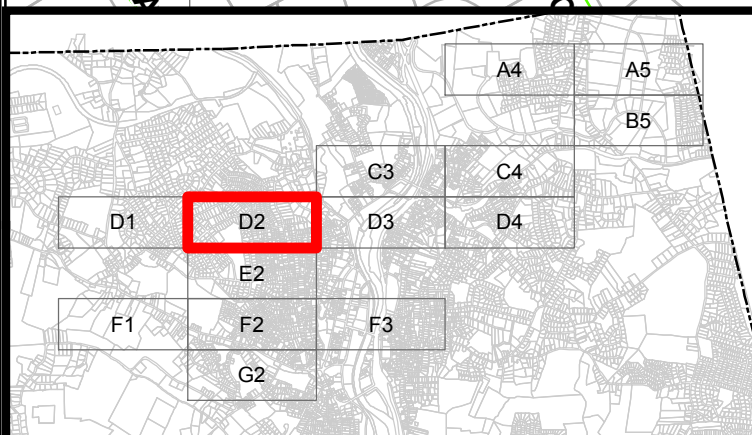
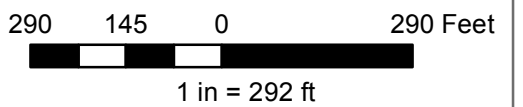
From CB, Light,
Indirect, see
Sketch9_2 - 2

CB (1), Light,
Indirect, see
Sketch9_2 - 5

CB (3), Light,
Indirect, see
Sketch9_2 - 6

From roof leader,
Heavy, Direct, see
Sketch 9_2 - 6

From CB, Light,
Indirect, see
Sketch9_2 - 7



Legend

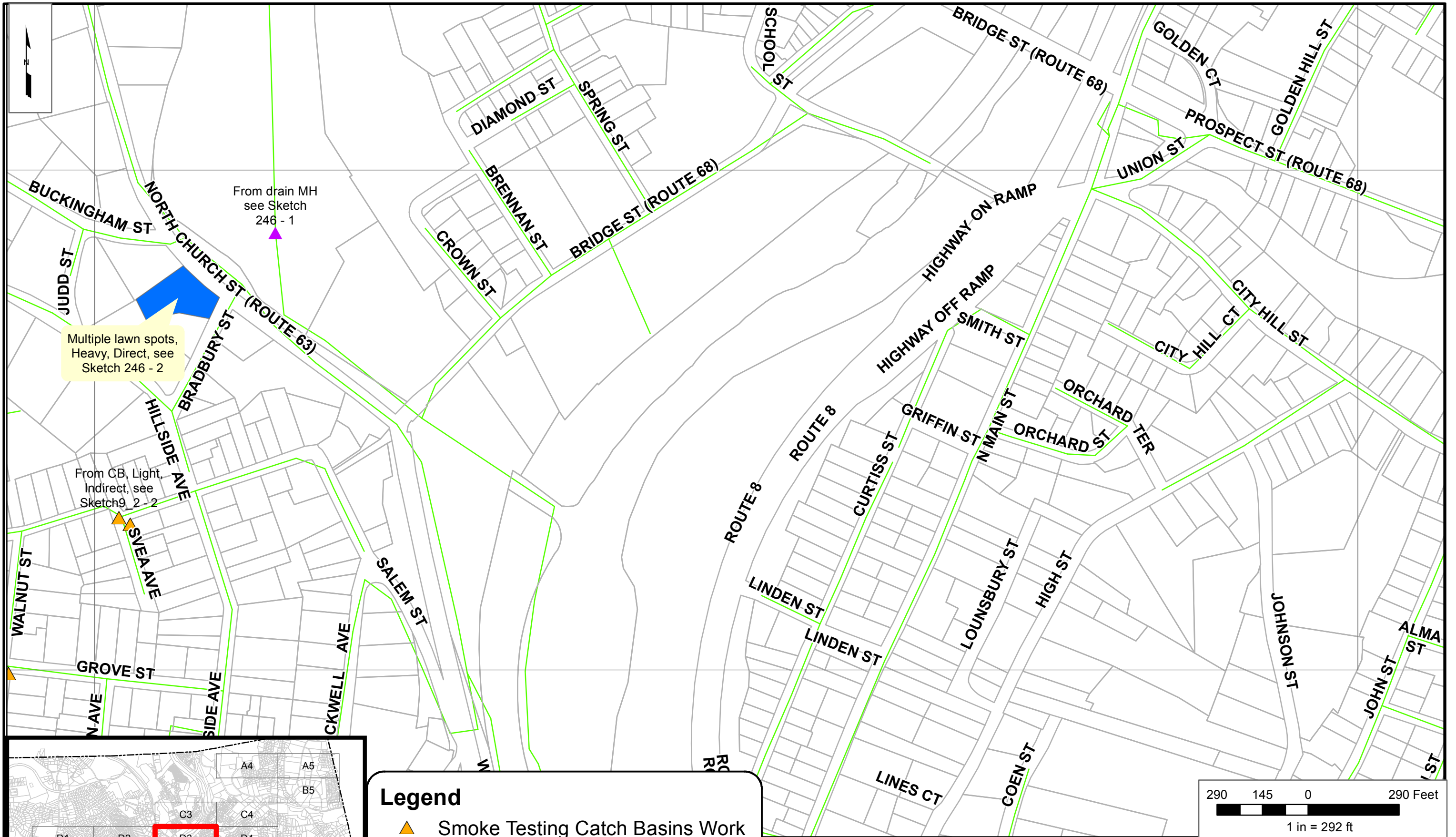
- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels

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Dye Testing 2016

SSES Phase 1
Naugatuck, CT
Building Inspections 1

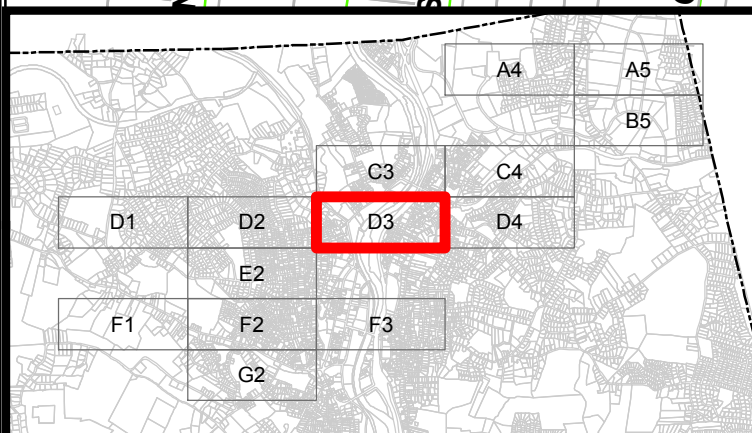
Figure
D2
Page 7 of 14



Multiple lawn spots,
Heavy, Direct, see
Sketch 246 - 2

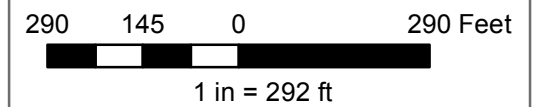
From drain MH
see Sketch
246 - 1

From CB, Light,
Indirect, see
Sketch 9_2 - 2



Legend

- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels

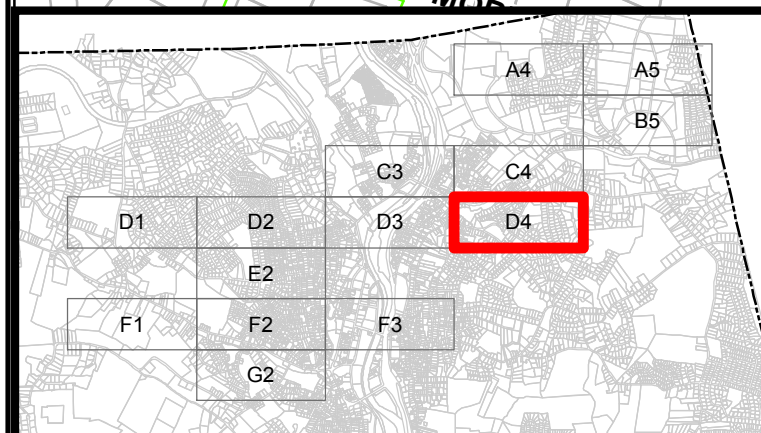
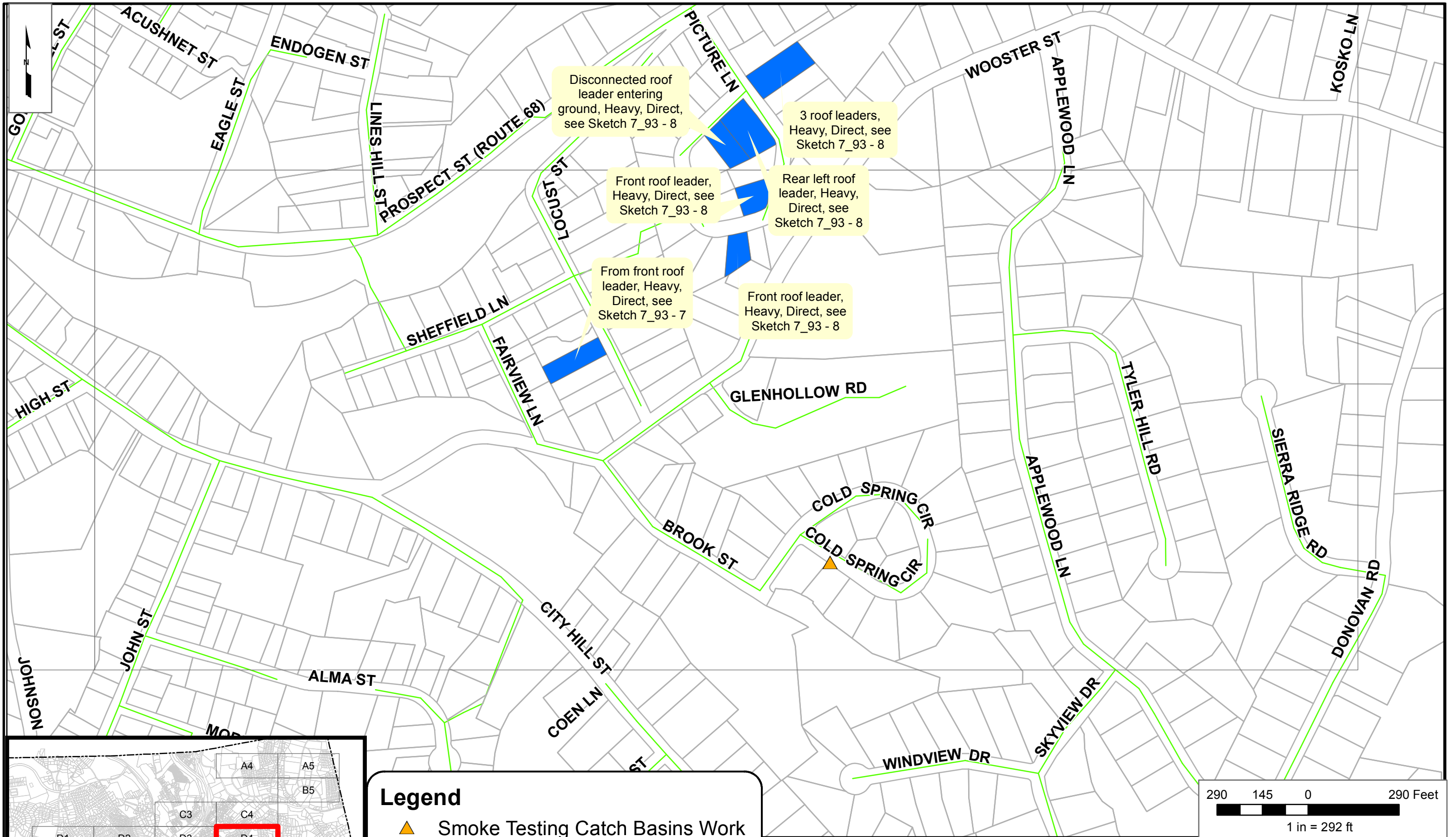


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Dye Testing 2016

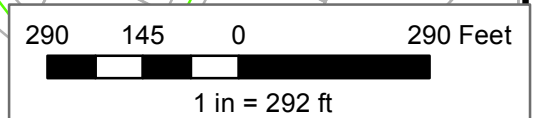
SSES Phase 1
Naugatuck, CT
Building Inspections 1

Figure
D3
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Legend

- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels

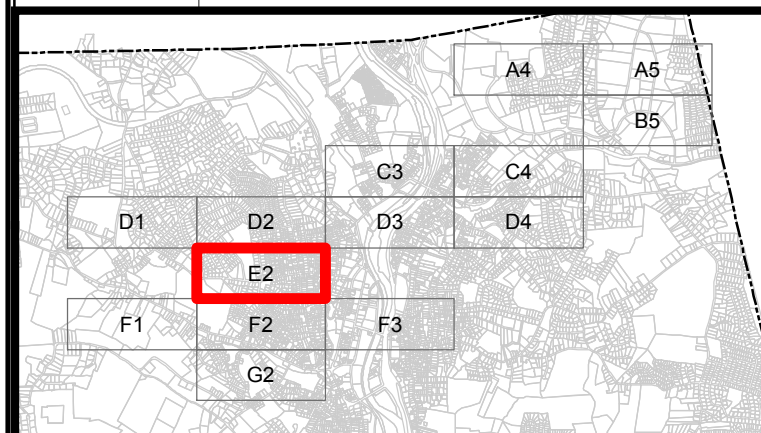


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Dye Testing 2016

SSES Phase 1
Naugatuck, CT
Building Inspections 1

Figure
D4
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Legend

- ▲ Smoke Testing Catch Basins Work
- ▲ Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels

From retaining wall & multiple spots on lawn, Heavy, Direct, see Sketch 9_2 - 8

From CB, Light, Indirect, see Sketch 9_2 - 8

CB (2), Light, Indirect, see Sketch 9_2 - 9

CB (2), Light, Indirect, see Sketch 9_2 - 11

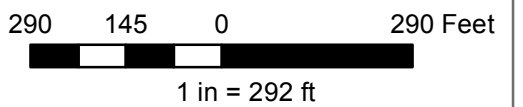
From 4" PVC pipe, Heavy, Direct, see Sketch 9_2 - 10

From CB, Light, Indirect, see Sketch 9_2 - 7

CB (1), Light, Indirect, see Sketch 9_2 - 4

CB (1), Light, Indirect, see Sketch 9_2 - 5

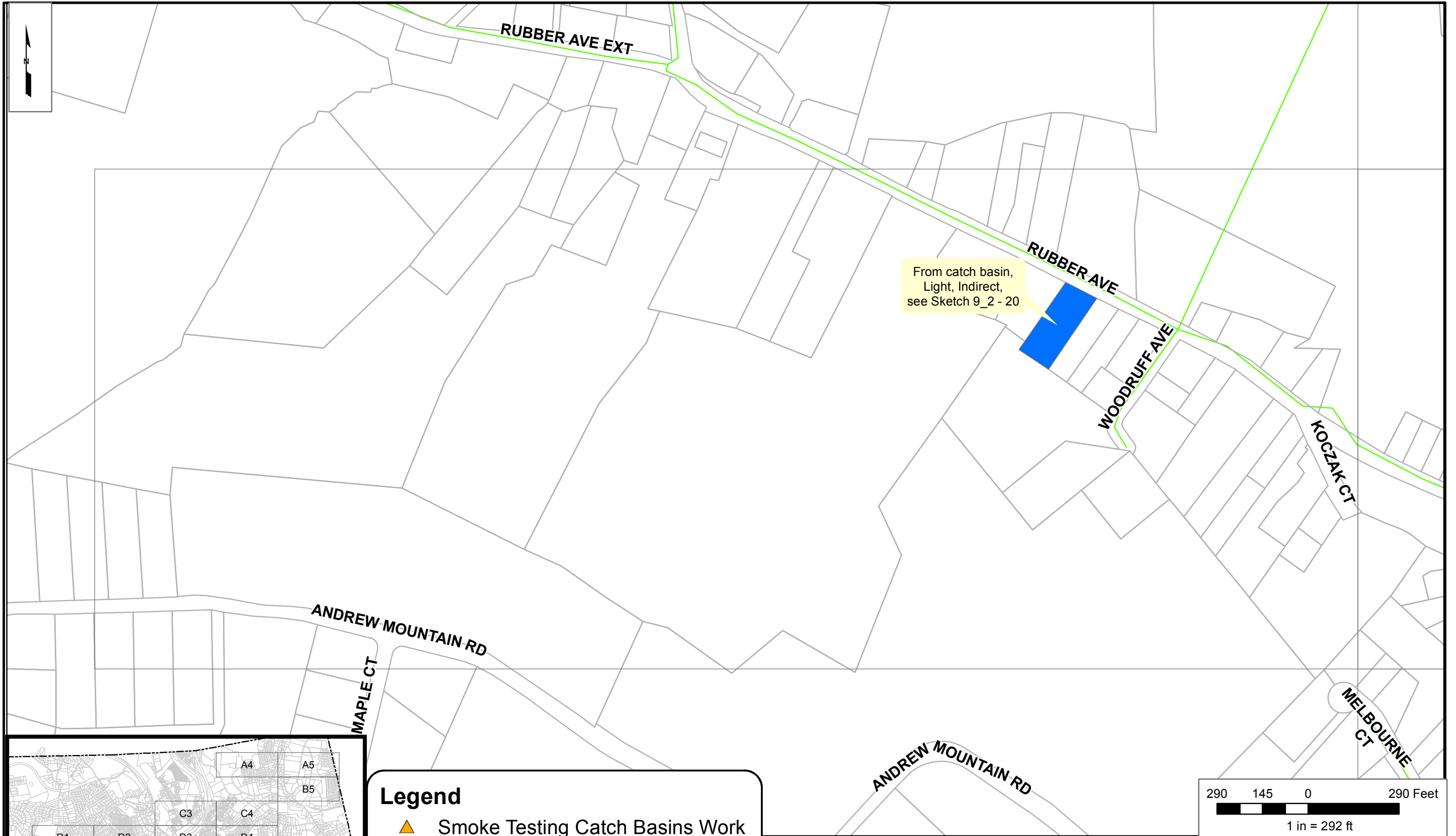
CB (3), Light, Indirect, see Sketch 9_2 - 6







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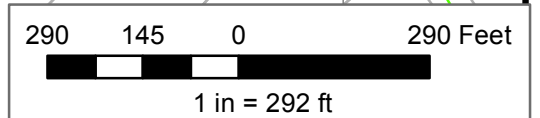
Dye Testing 2016
SSES Phase 1
Naugatuck, CT
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Figure
E2
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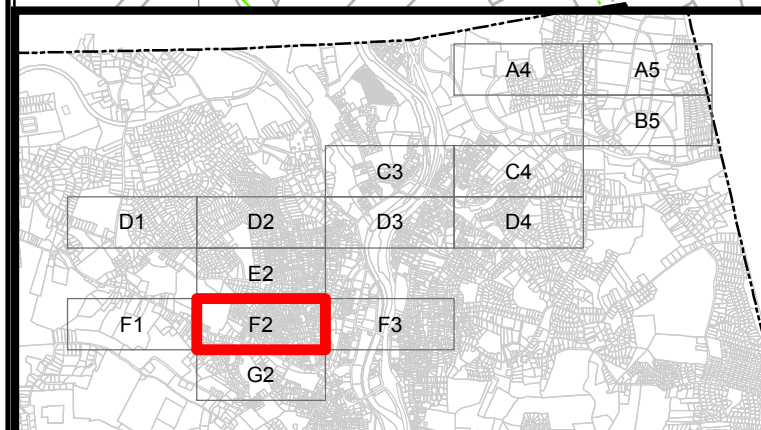


Legend

-  Smoke Testing Catch Basins Work
-  Smoke Testing Manhole Work
-  Smoke Testing Private Property Work
-  Naugatuck_Parcels

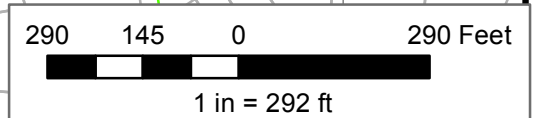


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	DRAWN: 6/9/2016		
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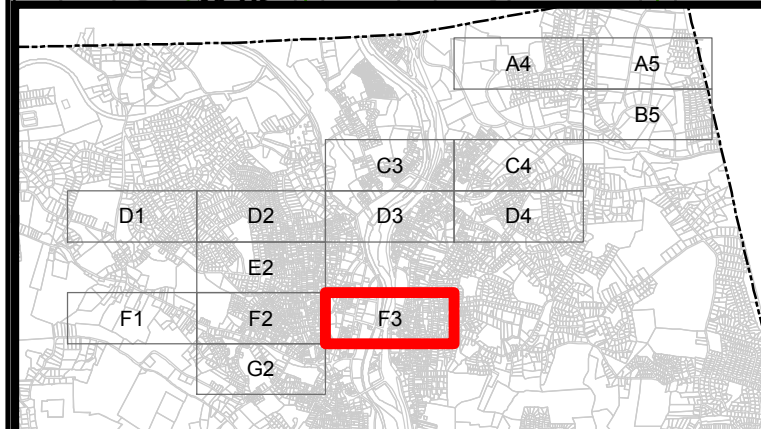


Legend

- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels

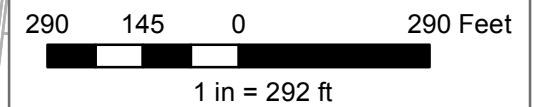


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	DRAWN: 6/9/2016		
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Legend

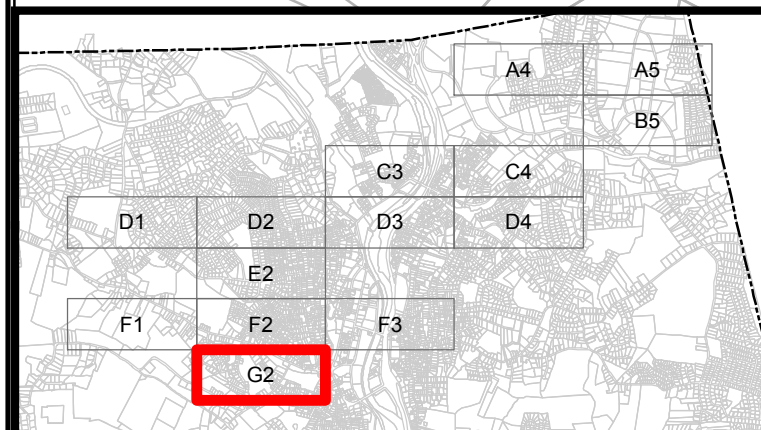
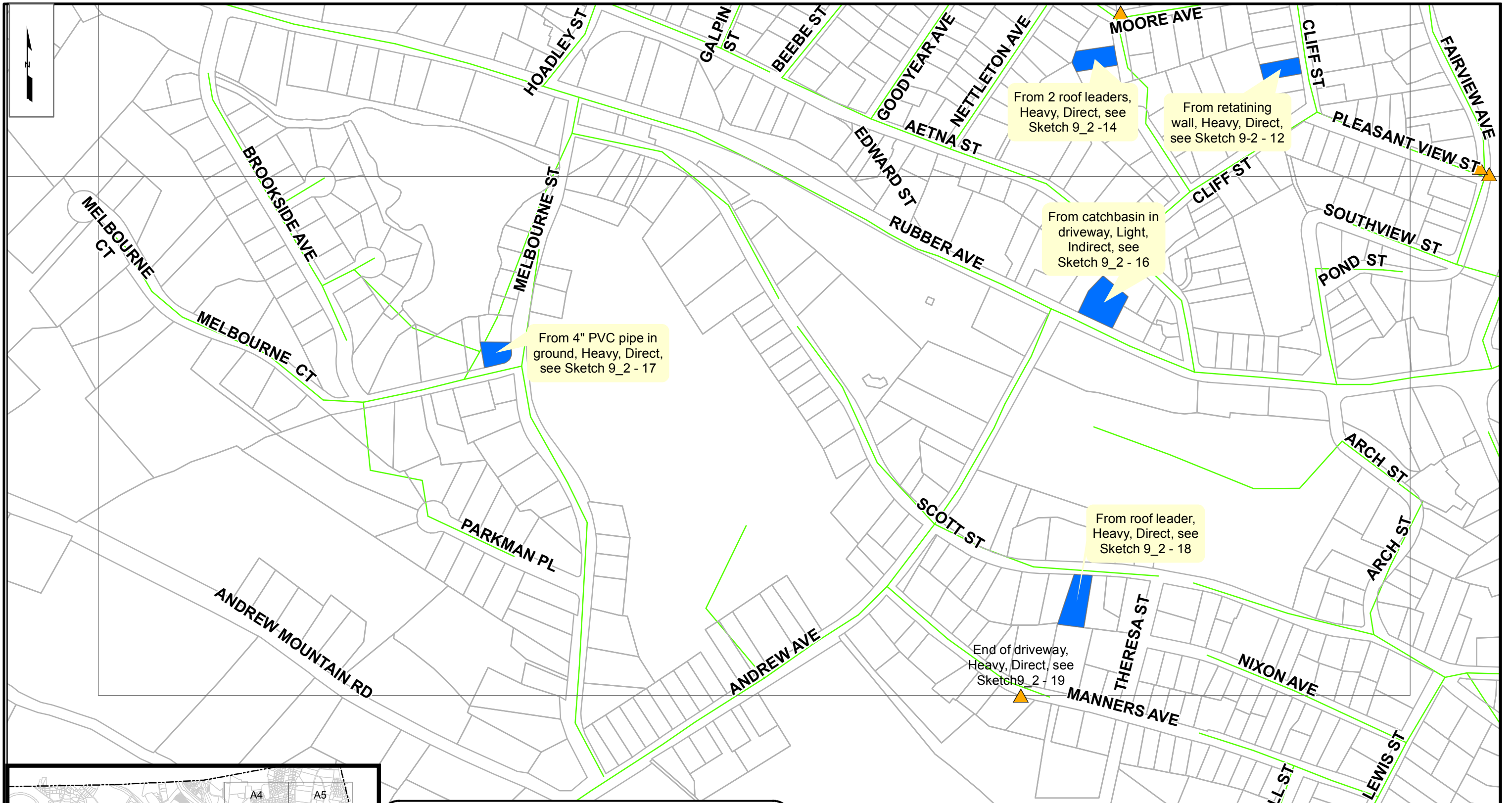
- Smoke Testing Catch Basins Work
- Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels



PROJECT NO.
DRAWN: 6/9/2016
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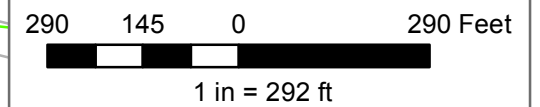
Dye Testing 2016

SSES Phase 1
Naugatuck, CT
Building Inspections 1



Legend

- ▲ Smoke Testing Catch Basins Work
- ▲ Smoke Testing Manhole Work
- Smoke Testing Private Property Work
- Naugatuck_Parcels



KLEINFELDER
Bright People. Right Solutions.
www.kleinfelder.com

PROJECT NO.
DRAWN: 6/9/2016
DRAWN BY:
CHECKED BY:

Dye Testing 2016

SSES Phase 1
Naugatuck, CT
Building Inspections 1

Figure
G2
Page 14 of 14

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APPENDIX D - WAGE RATES

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THIS IS A PUBLIC WORKS PROJECT

Covered by the

PREVAILING WAGE LAW

CT General Statutes Section 31-53

**If you have QUESTIONS regarding your wages
CALL (860) 263-6790**

Section 31-55 of the CT State Statutes requires every contractor or subcontractor performing work for the state to post in a prominent place the prevailing wages as determined by the Labor Commissioner.

Sec. 31-53b. Worker training requirements for public works projects. Enforcement. Regulations. Exceptions. (a) Each contract for a public works project entered into on or after July 1, 2009, by the state or any of its agents, or by any political subdivision of the state or any of its agents, described in subsection (h) of section 31-53, shall contain a provision requiring that each contractor furnish proof with the weekly certified payroll form for the first week each employee begins work on such project that any person performing the work of a mechanic, laborer or worker pursuant to the classifications of labor under section 31-53 on such public works project, pursuant to such contract, has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration or, has completed a new miner training program approved by the Federal Mine Safety and Health Administration in accordance with 30 CFR 46 or, in the case of telecommunications employees, has completed at least ten hours of training in accordance with 29 CFR 1910.268, and, on or after July 1, 2012, that any plumber or electrician subject to the continuing education requirements of section 20-334d, who has completed a course of at least ten hours in duration in construction safety and health approved by the federal Occupational Safety and Health Administration five or more years prior to the date such electrician or plumber begins work on such public works project, has completed a supplemental refresher training course of at least four hours in duration in construction safety and health taught by a federal Occupational Safety and Health Administration authorized trainer.

(b) Any person required to complete a course or program under subsection (a) of this section who has not completed the course or program shall be subject to removal from the worksite if the person does not provide documentation of having completed such course or program by the fifteenth day after the date the person is found to be in noncompliance. The Labor Commissioner or said commissioner's designee shall enforce this section.

(c) Not later than January 1, 2012, the Labor Commissioner shall adopt regulations, in accordance with the provisions of chapter 54, to implement the provisions of subsections (a) and (b) of this section. Such regulations shall require that the ten-hour construction safety and health courses required under subsection (a) of this section be conducted in accordance with federal Occupational Safety and Health Administration Training Institute standards, or, in the case of a supplemental refresher training course, shall include, but not be limited to, an update of revised Occupational Safety and Health Administration standards and a review of required construction hazards training, or in accordance with Federal Mine Safety and Health Administration Standards or in accordance with 29 CFR 1910.268, as appropriate. The Labor Commissioner shall accept as sufficient proof of compliance with the provisions of subsection (a) or (b) of this section a student course completion card issued by the federal Occupational Safety

and Health Administration Training Institute, or such other proof of compliance said commissioner deems appropriate, dated no earlier than five years before the commencement date of such public works project or, in the case of supplemental refresher training, a student course completion card issued by said Occupational Safety and Health Administration authorized trainer dated not earlier than five years prior to the date such electrician or plumber begins work on such public works project.

(d) This section shall not apply to employees of public service companies, as defined in section 16-1, or drivers of commercial motor vehicles driving the vehicle on the public works project and delivering or picking up cargo from public works projects provided they perform no labor relating to the project other than the loading and unloading of their cargo.

(P.A. 06-175, S. 1; P.A. 08-83, S. 1; P.A. 10-47, S. 2; P.A. 11-63, S. 1.)

History: P.A. 08-83 amended Subsec. (a) by making provisions applicable to public works project contracts entered into on or after July 1, 2009, replacing provision re total cost of work with reference to Sec. 31-53(g), requiring proof in certified payroll form that new mechanic, laborer or worker has completed a 10-hour or more construction safety course and adding provision re new miner training program, amended Subsec. (b) by substituting “person” for “employee” and adding “or program”, amended Subsec. (c) by adding “or in accordance with Federal Mine Safety and Health Administration Standards” and setting new deadline of January 1, 2009, deleted former Subsec. (d) re “public building”, added new Subsec. (d) re exemptions for public service company employees and delivery drivers who perform no labor other than delivery and made conforming and technical changes, effective January 1, 2009; P.A. 10-47 made a technical change in Subsec. (a); P.A. 11-63 amended Subsec. (a) by adding provision re supplemental refresher training course for plumbers and electricians subject to Sec. 20-334d, amended Subsec. (c) by adding provisions re regulations and subject matter of refresher training course and refresher training course student completion cards, and made technical changes, effective July 1, 2011.

ec. 31-55a. Annual adjustments to wage rates by contractors doing state work. Each contractor that is awarded a contract on or after October 1, 2002, for (1) the construction of a state highway or bridge that falls under the provisions of section 31-54, or (2) the construction, remodeling, refinishing, refurbishing, rehabilitation, alteration or repair of any public works project that falls under the provisions of section 31-53 shall contact the Labor Commissioner on or before July first of each year, for the duration of such contract, to ascertain the prevailing rate of wages on an hourly basis and the amount of payment or contributions paid or payable on behalf of each mechanic, laborer or worker employed upon the work contracted to be done, and shall make any necessary adjustments to such prevailing rate of wages and such payment or contributions paid or payable on behalf of each such employee, effective each July first.

(P.A. 02-69, S. 1.)

CONNECTICUT DEPARTMENT OF LABOR
WAGE AND WORKPLACE STANDARDS DIVISION

CONTRACTORS WAGE CERTIFICATION FORM
Construction Manager at Risk/General Contractor/Prime Contractor

I, _____ of _____
Officer, Owner, Authorized Rep. Company Name

do hereby certify that the _____
Company Name

Street

City

and all of its subcontractors will pay all workers on the

Project Name and Number

Street and City

the wages as listed in the schedule of prevailing rates required for such project (a copy of which is attached hereto).

Signed

Subscribed and sworn to before me this _____ day of _____, _____.

Notary Public

Return to:
Connecticut Department of Labor
Wage & Workplace Standards Division
200 Folly Brook Blvd.
Wethersfield, CT 06109

Rate Schedule Issued (Date): _____

Informational Bulletin

THE 10-HOUR OSHA CONSTRUCTION SAFETY AND HEALTH COURSE

(applicable to public building contracts entered into *on or after July 1, 2007*, where the total cost of all work to be performed is at least \$100,000)

- (1) This requirement was created by Public Act No. 06-175, which is codified in Section 31-53b of the Connecticut General Statutes (pertaining to the prevailing wage statutes);
- (2) The course is required for public building construction contracts (projects funded in whole or in part by the state or any political subdivision of the state) entered into on or after July 1, 2007;
- (3) It is required of private employees (not state or municipal employees) and apprentices who perform manual labor for a general contractor or subcontractor on a public building project where the total cost of all work to be performed is at least \$100,000;
- (4) The ten-hour construction course pertains to the ten-hour Outreach Course conducted in accordance with federal OSHA Training Institute standards, and, for telecommunications workers, a ten-hour training course conducted in accordance with federal OSHA standard, 29 CFR 1910.268;
- (5) The internet website for the federal OSHA Training Institute is http://www.osha.gov/fso/ote/training/edcenters/fact_sheet.html;
- (6) The statutory language leaves it to the contractor and its employees to determine who pays for the cost of the ten-hour Outreach Course;
- (7) Within 30 days of receiving a contract award, a general contractor must furnish proof to the Labor Commissioner that all employees and apprentices performing manual labor on the project will have completed such a course;
- (8) Proof of completion may be demonstrated through either: (a) the presentation of a *bona fide* student course completion card issued by the federal OSHA Training Institute; *or* (2) the presentation of documentation provided to an employee by a trainer certified by the Institute pending the actual issuance of the completion card;
- (9) Any card with an issuance date more than 5 years prior to the commencement date of the construction project shall not constitute proof of compliance;

- (10) Each employer shall affix a copy of the construction safety course completion card to the certified payroll submitted to the contracting agency in accordance with Conn. Gen. Stat. § 31-53(f) on which such employee's name first appears;
- (11) Any employee found to be in non-compliance shall be subject to removal from the worksite if such employee does not provide satisfactory proof of course completion to the Labor Commissioner by the fifteenth day after the date the employee is determined to be in noncompliance;
- (12) Any such employee who is determined to be in noncompliance may continue to work on a public building construction project for a maximum of fourteen consecutive calendar days while bringing his or her status into compliance;
- (13) The Labor Commissioner may make complaint to the prosecuting authorities regarding any employer or agent of the employer, or officer or agent of the corporation who files a false certified payroll with respect to the status of an employee who is performing manual labor on a public building construction project;
- (14) The statute provides the minimum standards required for the completion of a safety course by manual laborers on public construction contracts; any contractor can exceed these minimum requirements; and
- (15) Regulations clarifying the statute are currently in the regulatory process, and shall be posted on the CTDOL website as soon as they are adopted in final form.
- (16) Any questions regarding this statute may be directed to the Wage and Workplace Standards Division of the Connecticut Labor Department via the internet website of <http://www.ctdol.state.ct.us/wgwkstnd/wgemenu.htm>; or by telephone at (860)263-6790.

THE ABOVE INFORMATION IS PROVIDED EXCLUSIVELY AS AN EDUCATIONAL RESOURCE, AND IS NOT INTENDED AS A SUBSTITUTE FOR LEGAL INTERPRETATIONS WHICH MAY ULTIMATELY ARISE CONCERNING THE CONSTRUCTION OF THE STATUTE OR THE REGULATIONS.

November 29, 2006

Notice
To All Mason Contractors and Interested Parties
Regarding Construction Pursuant to Section 31-53 of the
Connecticut General Statutes (Prevailing Wage)

The Connecticut Labor Department Wage and Workplace Standards Division is empowered to enforce the prevailing wage rates on projects covered by the above referenced statute.

Over the past few years the Division has withheld enforcement of the rate in effect for workers who operate a forklift on a prevailing wage rate project due to a potential jurisdictional dispute.

The rate listed in the schedules and in our Occupational Bulletin (see enclosed) has been as follows:

Forklift Operator:

- **Laborers (Group 4) Mason Tenders** - operates forklift solely to assist a mason to a maximum height of nine feet only.
- **Power Equipment Operator (Group 9)** - operates forklift to assist any trade and to assist a mason to a height over nine feet.

The U.S. Labor Department conducted a survey of rates in Connecticut but it has not been published and the rate in effect remains as outlined in the above Occupational Bulletin.

Since this is a classification matter and not one of jurisdiction, effective January 1, 2007 the Connecticut Labor Department will enforce the rate on each schedule in accordance with our statutory authority.

Your cooperation in filing appropriate and accurate certified payrolls is appreciated.

**Connecticut Department of Labor
Wage and Workplace Standards Division
FOOTNOTES**

⇒ Please Note: If the “Benefits” listed on the schedule for the following occupations includes a letter(s) (+ a or + a+b for instance), refer to the information below.

Benefits to be paid at the appropriate prevailing wage rate for the listed occupation.

If the “Benefits” section for the occupation lists only a dollar amount, disregard the information below.

**Bricklayers, Cement Masons, Cement Finishers, Concrete Finishers, Stone Masons
(Building Construction) and
(Residential- Hartford, Middlesex, New Haven, New London and Tolland Counties)**

- a. Paid Holiday: Employees shall receive 4 hours for Christmas Eve holiday provided the employee works the regularly scheduled day before and after the holiday. Employers may schedule work on Christmas Eve and employees shall receive pay for actual hours worked in addition to holiday pay.

Elevator Constructors: Mechanics

- a. Paid Holidays: New Year’s Day, Memorial Day, Independence Day, Labor Day, Veterans’ Day, Thanksgiving Day, Christmas Day, plus the Friday after Thanksgiving.
- b. Vacation: Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

Glaziers

- a. Paid Holidays: Labor Day and Christmas Day.

**Power Equipment Operators
(Heavy and Highway Construction & Building Construction)**

- a. Paid Holidays: New Year’s Day, Good Friday, Memorial day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day, provided the employee works 3 days during the week in which the holiday falls, if scheduled, and if scheduled, the working day before and the working day after the holiday. Holidays falling on Saturday may be observed on Saturday, or if the employer so elects, on the preceding Friday.

Ironworkers

- a. Paid Holiday: Labor Day provided employee has been on the payroll for the 5 consecutive work days prior to Labor Day.

Laborers (Tunnel Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day. No employee shall be eligible for holiday pay when he fails, without cause, to work the regular work day preceding the holiday or the regular work day following the holiday.

Roofers

- a. Paid Holidays: July 4th, Labor Day, and Christmas Day provided the employee is employed 15 days prior to the holiday.

Sprinkler Fitters

- a. Paid Holidays: Memorial Day, July 4th, Labor Day, Thanksgiving Day and Christmas Day, provided the employee has been in the employment of a contractor 20 working days prior to any such paid holiday.

Truck Drivers

(Heavy and Highway Construction & Building Construction)

- a. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas day, and Good Friday, provided the employee has at least 31 calendar days of service and works the last scheduled day before and the first scheduled day after the holiday, unless excused.

Information Bulletin ***Occupational Classifications***

The Connecticut Department of Labor has the responsibility to properly determine "job classification" on prevailing wage projects covered under C.G.S. Section 31-53(d).

Note: This information is intended to provide a sample of some occupational classifications for guidance purposes only. It is not an all-inclusive list of each occupation's duties. This list is being provided only to highlight some areas where a contractor may be unclear regarding the proper classification. If unsure, the employer should seek guidelines for CTDOL.

Below are additional clarifications of specific job duties performed for certain classifications:

- **ASBESTOS WORKERS**

Applies all insulating materials, protective coverings, coatings and finishes to all types of mechanical systems.

- **ASBESTOS INSULATOR**

Handle, install apply, fabricate, distribute, prepare, alter, repair, dismantle, heat and frost insulation, including penetration and fire stopping work on all penetration fire stop systems.

- **BOILERMAKERS**

Erects hydro plants, incomplete vessels, steel stacks, storage tanks for water, fuel, etc. Builds incomplete boilers, repairs heat exchanges and steam generators.

- **BRICKLAYERS, CEMENT MASONS, CEMENT FINISHERS, MARBLE MASONS, PLASTERERS, STONE MASONS, PLASTERERS. STONE MASONS, TERRAZZO WORKERS, TILE SETTERS**

Lays building materials such as brick, structural tile and concrete cinder, glass, gypsum, terra cotta block. Cuts, tools and sets marble, sets stone, finishes concrete, applies decorative steel, aluminum and plastic tile, applies cements, sand, pigment and marble chips to floors, stairways, etc.

- **CARPENTERS, MILLWRIGHTS. PILEDRIVERMEN. LATHERS. RESILEINT FLOOR LAYERS, DOCK BUILDERS, DIKERS, DIVER TENDERS**

Constructs, erects, installs and repairs structures and fixtures of wood, plywood and wallboard. Installs, assembles, dismantles, moves industrial machinery. Drives piling into ground to provide foundations for structures such as buildings and bridges, retaining walls for earth embankments, such as cofferdams. Fastens wooden, metal or rockboard lath to walls, ceilings and partitions of buildings, acoustical tile layer, concrete form builder. Applies firestopping materials on fire resistive joint systems only. Installation of curtain/window walls only where attached to wood or metal studs. Installation of insulated material of all types whether blown, nailed or attached in other ways to walls, ceilings and floors of buildings. Assembly and installation of modular furniture/furniture systems. Free-standing furniture is not covered. This includes free standing: student chairs, study top desks, book box desks, computer furniture, dictionary stand, atlas stand, wood shelving, two-position information access station, file cabinets, storage cabinets, tables, etc.

- **LABORER, CLEANING**

- The clean up of any construction debris and the general (heavy/light) cleaning, including sweeping, wash down, mopping, wiping of the construction facility and its furniture, washing, polishing, and dusting.

- **DELIVERY PERSONNEL**

- If delivery of supplies/building materials is to one common point and stockpiled there, prevailing wages are not required. If the delivery personnel are involved in the distribution of the material to multiple locations within the construction site then they would have to be paid prevailing wages for the type of work performed: laborer, equipment operator, electrician, ironworker, plumber, etc.

- An example of this would be where delivery of drywall is made to a building and the delivery personnel distribute the drywall from one "stockpile" location to further sub-locations on each floor. Distribution of material around a construction site is the job of a laborer or tradesman, and not a delivery personnel.

- **ELECTRICIANS**

Install, erect, maintenance, alteration or repair of any wire, cable, conduit, etc., which generates, transforms, transmits or uses electrical energy for light, heat, power or other purposes, including the Installation or maintenance of telecommunication, LAN wiring or computer equipment, and low voltage wiring. ****License required per Connecticut General Statutes: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9.***

- **ELEVATOR CONSTRUCTORS**

Install, erect, maintenance and repair of all types of elevators, escalators, dumb waiters and moving walks. **License required by Connecticut General Statutes: R-1,2,5,6.*

- **FORK LIFT OPERATOR**

Laborers Group 4) Mason Tenders - operates forklift solely to assist a mason to a maximum height of nine (9) feet only.

Power Equipment Operator Group 9 - operates forklift to assist any trade, and to assist a mason to a height over nine (9) feet.

- **GLAZIERS**

Glazing wood and metal sash, doors, partitions, and 2 story aluminum storefronts. Installs glass windows, skylights, store fronts and display cases or surfaces such as building fronts, interior walls, ceilings and table tops and metal store fronts. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers, which require equal composite workforce.

- **IRONWORKERS**

Erection, installation and placement of structural steel, precast concrete, miscellaneous iron, ornamental iron, metal curtain wall, rigging and reinforcing steel. Handling, sorting, and installation of reinforcing steel (rebar). Metal bridge rail (traffic), metal bridge handrail, and decorative security fence installation. Installation of aluminum window walls and curtain walls is the "joint" work of glaziers and ironworkers which require equal composite workforce.

- **INSULATOR**

- Installing fire stopping systems/materials for "Penetration Firestop Systems": transit to cables, electrical conduits, insulated pipes, sprinkler pipe penetrations, ductwork behind radiation, electrical cable trays, fire rated pipe penetrations, natural polypropylene, HVAC ducts, plumbing bare metal, telephone and communication wires, and boiler room ceilings.

- **LABORERS**

Acetylene burners, asphalt rakers, chain saw operators, concrete and power buggy operator, concrete saw operator, fence and guard rail erector (except metal bridge rail (traffic), decorative security fence (non-metal).

installation.), hand operated concrete vibrator operator, mason tenders, pipelayers (installation of storm drainage or sewage lines on the street only), pneumatic drill operator, pneumatic gas and electric drill operator, powermen and wagon drill operator, air track operator, block paver, curb setters, blasters, concrete spreaders.

- **PAINTERS**

Maintenance, preparation, cleaning, blasting (water and sand, etc.), painting or application of any protective coatings of every description on all bridges and appurtenances of highways, roadways, and railroads. Painting, decorating, hardwood finishing, paper hanging, sign writing, scenic art work and drywall hhg for any and all types of building and residential work.

- **LEAD PAINT REMOVAL**

- Painter's Rate

1. Removal of lead paint from bridges.
2. Removal of lead paint as preparation of any surface to be repainted.
3. Where removal is on a Demolition project prior to reconstruction.

- Laborer's Rate

1. Removal of lead paint from any surface NOT to be repainted.
2. Where removal is on a *TOTAL* Demolition project only.

- **PLUMBERS AND PIPEFITTERS**

Installation, repair, replacement, alteration or maintenance of all plumbing, heating, cooling and piping. ****License required per Connecticut General Statutes: P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2 S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4.***

- **POWER EQUIPMENT OPERATORS**

Operates several types of power construction equipment such as compressors, pumps, hoists, derricks, cranes, shovels, tractors, scrapers or motor graders, etc. Repairs and maintains equipment. ****License required, crane operators only, per Connecticut General Statutes.***

- **ROOFERS**

Covers roofs with composition shingles or sheets, wood shingles, slate or asphalt and gravel to waterproof roofs, including preparation of surface. (demolition or removal of any type of roofing and or clean-up of any and all areas where a roof is to be relaid.)

- **SHEETMETAL WORKERS**

Fabricate, assembles, installs and repairs sheetmetal products and equipment in such areas as ventilation, air-conditioning, warm air heating, restaurant equipment, architectural sheet metal work, sheetmetal roofing, and aluminum gutters. Fabrication, handling, assembling, erecting, altering, repairing, etc. of coated metal material panels and composite metal material panels when used on building exteriors and interiors as soffits, fascia, louvers, partitions, canopies, cornice, column covers, awnings, beam covers, cladding, sun shades, lighting troughs, spires, ornamental roofing, metal ceilings, mansards, copings, ornamental and ventilation hoods, vertical and horizontal siding panels, trim, etc. The sheet metal classification also applies to the vast variety of coated metal material panels and composite metal material panels that have evolved over the years as an alternative to conventional ferrous and non-ferrous metals like steel, iron, tin, copper, brass, bronze, aluminum, etc. Fabrication, handling, assembling, erecting, altering, repairing, etc. of architectural metal roof, standing seam roof, composite metal roof, metal and composite bathroom/toilet partitions, aluminum gutters, metal and composite lockers and shelving, kitchen equipment, and walk-in coolers. To include testing and air –balancing ancillary to installation and construction.

- **SPRINKLER FITTERS**

Installation, alteration, maintenance and repair of fire protection sprinkler systems.

****License required per Connecticut General Statutes: F-1,2,3,4.***

- **TILE MARBLE AND TERRAZZO FINISHERS**

Assists and tends the tile setter, marble mason and terrazzo worker in the performance of their duties.

- **TRUCK DRIVERS**

~How to pay truck drivers delivering asphalt is under REVISION~

Truck Drivers are required to be paid prevailing wage for time spent "working" directly on the site. These drivers remain covered by the prevailing wage for any time spent transporting between the actual construction location and facilities (such as fabrication, plants, mobile factories, batch plant, borrow pits, job headquarters, tool yards, etc.) dedicated exclusively, or nearly so, to performance of the contract or project, which are so located in proximity to the actual construction location that it is reasonable to include them. ****License required, drivers only, per Connecticut General Statutes.***

For example:

- Material men and deliverymen are not covered under prevailing wage as long as they are not directly involved in the construction process. If, they unload the material, they would then be covered by prevailing wage for the classification they are performing work in: laborer, equipment operator, etc.
- Hauling material off site is not covered provided they are not dumping it at a location outlined above.
- Driving a truck on site and moving equipment or materials on site would be considered covered work, as this is part of the construction process.

➤ *Any questions regarding the proper classification should be directed to:*
Public Contract Compliance Unit
Wage and Workplace Standards Division
Connecticut Department of Labor
200 Folly Brook Blvd, Wethersfield, CT 06109
(860) 263-6790.

[New] In accordance with Section 31-53b(a) of the C.G.S. each contractor shall provide a copy of the OSHA 10 Hour Construction Safety and Health Card for each employee, to be attached to the first certified payroll on the project.

PAYROLL CERTIFICATION FOR PUBLIC WORKS PROJECTS											Connecticut Department of Labor Wage and Workplace Standards Division 200 Folly Brook Blvd. Wethersfield, CT 06109								
In accordance with Connecticut General Statutes, 31-53 Certified Payrolls with a statement of compliance shall be submitted monthly to the contracting agency.											WEEKLY PAYROLL								
CONTRACTOR NAME AND ADDRESS: Landon Corporation, 15 Connecticut Avenue, Northford, CT 06472						SUBCONTRACTOR NAME & ADDRESS XYZ Corporation 2 Main Street Yantic, CT 06389					WORKER'S COMPENSATION INSURANCE CARRIER Travelers Insurance Company POLICY # #BAC8888928 EFFECTIVE DATE: 1/1/09 EXPIRATION DATE: 12/31/09								
PAYROLL NUMBER	Week-Ending Date	PROJECT NAME & ADDRESS								Total ST Hours	BASE HOURLY RATE	TYPE OF FRINGE BENEFITS Per Hour 1 through 6 (see back)	GROSS PAY FOR ALL WORK PERFORMED THIS WEEK	TOTAL DEDUCTIONS			GROSS PAY FOR THIS PREVAILING RATE JOB	CHECK # AND NET PAY	
		DAY AND DATE												FICA	FEDERAL	STATE			LIST OTHER
PERSON/WORKER, ADDRESS and SECTION	APPR RATE %	MALE/FEMALE AND RACE*	WORK CLASSIFICATION	S	M	T	W	TH	F	S	Total O/T Hours	TOTAL FRINGE BENEFIT PLAN CASH	FICA	WITH-HOLDING	WITH-HOLDING	LIST OTHER	RATE JOB	CHECK # AND NET PAY	
Trade License Type & Number - OSHA 10 Certification Number				20	21	22	23	24	25	26	HOURS WORKED EACH DAY								
Robert Craft 81 Maple Street Willimantic, CT 06226		M/C	Electrical Lineman E-1 1234567 Owner OSHA 123456		8	8	8	8	8		S-TIME 40	\$ 30.75 Base Rate	1. \$ 5.80 2. \$ 3. \$ 2.01				P-xxxx	\$1,582.80	#123 \$ xxx.xx
Ronald Jones 212 Elm Street Norwich, CT 06360	65%	M/B	Electrical Apprentice OSHA 234567		8	8	8	8	8		S-TIME 40	\$ 19.99 Base Rate	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$	xx.xx	xxx.xx	xx.xx	G-xxx	\$1,464.80	#124 \$xxx.xx
Franklin T. Smith 234 Washington Rd. New London, CT 06320 SECTION B		M/H	Project Manager			8					S-TIME 8	\$ Base Rate	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$	xx.xx	xx.xx	xx.xx	M-xx.x	\$1,500.00	#125 xxx.xx
											S-TIME	\$ Base Rate	1. \$ 2. \$ 3. \$ 4. \$ 5. \$ 6. \$						
											O-TIME	\$ Cash Fringe	4. \$ 5. \$ 6. \$						

OSHA 10 ~ATTACH CARD TO 1ST CERTIFIED PAYROLL

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker's compensation, income taxes, etc.).

Please specify the type of benefits provided:

- 1) Medical or hospital care Blue Cross 4) Disability _____
- 2) Pension or retirement _____ 5) Vacation, holiday _____
- 3) Life Insurance Utopia 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of 9/26/09,

I, Robert Craft of XYZ Corporation, (hereafter known as

Employer) in my capacity as Owner (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

- a) The records submitted are true and accurate;
- b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such employee to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;
- c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);
- d) Each such employee of the Employer is covered by a worker's compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;
- e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and
- f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such employee's name first appears.

Robert Craft owner 10/2/09
 (Signature) (Title) Submitted on (Date)

Section B: Applies to CONNDOT Projects ONLY

That pursuant to CONNDOT contract requirements for reporting purposes only, all employees listed under Section B who performed work on this project are not covered under the prevailing wage requirements defined in Connecticut General Statutes Section 31-53.

Robert Craft owner 10/2/09
 (Signature) (Title) Submitted on (Date)

Note: CTDOL will assume all hours worked were performed under Section A unless clearly delineated as Section B WWS-CP1 as such. Should an employee perform work under both Section A and Section B, the hours worked and wages paid must be segregated for reporting purposes.

*****THIS IS A PUBLIC DOCUMENT***
DO NOT INCLUDE SOCIAL SECURITY NUMBERS**

***FRINGE BENEFITS EXPLANATION (P):**

Bona fide benefits paid to approved plans, funds or programs, except those required by Federal or State Law (unemployment tax, worker’s compensation, income taxes, etc.).

Please specify the type of benefits provided:

- 1) Medical or hospital care _____ 4) Disability _____
- 2) Pension or retirement _____ 5) Vacation, holiday _____
- 3) Life Insurance _____ 6) Other (please specify) _____

CERTIFIED STATEMENT OF COMPLIANCE

For the week ending date of _____,

I, _____ of _____, (hereafter known as Employer) in my capacity as _____ (title) do hereby certify and state:

Section A:

1. All persons employed on said project have been paid the full weekly wages earned by them during the week in accordance with Connecticut General Statutes, section 31-53, as amended. Further, I hereby certify and state the following:

- a) The records submitted are true and accurate;
- b) The rate of wages paid to each mechanic, laborer or workman and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as defined in Connecticut General Statutes, section 31-53 (h), are not less than the prevailing rate of wages and the amount of payment or contributions paid or payable on behalf of each such person to any employee welfare fund, as determined by the Labor Commissioner pursuant to subsection Connecticut General Statutes, section 31-53 (d), and said wages and benefits are not less than those which may also be required by contract;
- c) The Employer has complied with all of the provisions in Connecticut General Statutes, section 31-53 (and Section 31-54 if applicable for state highway construction);
- d) Each such person is covered by a worker’s compensation insurance policy for the duration of his employment which proof of coverage has been provided to the contracting agency;
- e) The Employer does not receive kickbacks, which means any money, fee, commission, credit, gift, gratuity, thing of value, or compensation of any kind which is provided directly or indirectly, to any prime contractor, prime contractor employee, subcontractor, or subcontractor employee for the purpose of improperly obtaining or rewarding favorable treatment in connection with a prime contract or in connection with a prime contractor in connection with a subcontractor relating to a prime contractor; and
- f) The Employer is aware that filing a certified payroll which he knows to be false is a class D felony for which the employer may be fined up to five thousand dollars, imprisoned for up to five years or both.

2. OSHA~The employer shall affix a copy of the construction safety course, program or training completion document to the certified payroll required to be submitted to the contracting agency for this project on which such persons name first appears.

 (Signature) (Title) Submitted on (Date)

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Minimum Rates and Classifications for Heavy/Highway Construction

ID#: 23-55194

**Connecticut Department of Labor
Wage and Workplace Standards**

By virtue of the authority vested in the Labor Commissioner under provisions of Section 31-53 of the General Statutes of Connecticut, as amended, the following are declared to be the prevailing rates and welfare payments and will apply only where the contract is advertised for bid within 20 days of the date on which the rates are established. Any contractor or subcontractor not obligated by agreement to pay to the welfare and pension fund shall pay this amount to each employee as part of his/her hourly wages.

Project Number: FY24-B062

Project Town: Naugatuck

State#:

FAP#:

Project: Sanitary Sewer Improvements

CLASSIFICATION	Hourly Rate	Benefits
1) Boilermaker	45.21	29.05
1a) Bricklayer, Cement Masons, Cement Finishers, Plasterers, Stone Masons	39.92	34.47
2) Carpenters, Piledrivermen	37.61	27.61
2a) Diver Tenders	37.61	27.61
3) Divers	46.07	27.61
03a) Millwrights	38.02	28.41
4) Painters: (Bridge Construction) Brush, Roller, Blasting (Sand, Water, etc.), Spray	56.25	25.15
4a) Painters: Brush and Roller	37.62	24.55
4b) Painters: Spray Only	40.62	24.55

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4c) Painters: Steel Only	39.62	24.55
4d) Painters: Blast and Spray	40.62	24.55
4e) Painters: Tanks, Tower and Swing	39.62	24.55
4f) Elevated Tanks (60 feet and above)	46.62	24.55
5) Electrician (Trade License required: E-1,2 L-5,6 C-5,6 T-1,2 L-1,2 V-1,2,7,8,9)	43.4	32.07+3% of gross wage
6) Ironworkers: Ornamental, Reinforcing, Structural, and Precast Concrete Erection	42.37	40.02 + a
7) Plumbers (Trade License required: (P-1,2,6,7,8,9 J-1,2,3,4 SP-1,2) and Pipefitters (Including HVAC Work) (Trade License required: S-1,2,3,4,5,6,7,8 B-1,2,3,4 D-1,2,3,4 G-1, G-2, G-8, G-9)	48.28	35.50
----LABORERS----		
8) Group 1: General Laborers and concrete specialist	33.5	25.59
8) Group 1a: Acetylene Burners (Hours worked with a torch)	34.5	25.59
9) Group 2: Chain saw operators, fence and guard rail erectors, pneumatic tool operators, powdermen	33.75	25.59
10) Group 3: Pipelayers	34.0	25.59
11) Group 4: Jackhammer/Pavement breaker (handheld); mason tenders (cement/concrete), catch basin builders, asphalt rakers, air track operators, block paver, curb setter and forklift operators	34.0	25.59

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12) Group 5: Toxic waste removal (non-mechanical systems)	35.5	25.59
13) Group 6: Blasters	35.25	25.59
Group 7: Asbestos/lead removal, non-mechanical systems (does not include leaded joint pipe)	36.5	25.59
Group 8: Traffic control signalmen	20.1	25.59
Group 9: Hydraulic Drills	34.25	25.59
Group 10: Toxic Waste Removers A or B With PPE	36.5	25.59
----LABORERS (TUNNEL CONSTRUCTION, FREE AIR). Shield Drive and Liner Plate Tunnels in Free Air.----		
13a) Miners, Motormen, Mucking Machine Operators, Nozzle Men, Grout Men, Shaft & Tunnel Steel & Rodmen, Shield & Erector, Arm Operator, Cable Tenders	35.73	25.59 + a
13b) Brakemen, Trackmen, Miners' Helpers and all other men	34.76	25.59 + a
----CLEANING, CONCRETE AND CAULKING TUNNEL----		
14) Concrete Workers, Form Movers, and Strippers	34.76	25.59 + a
15) Form Erectors	35.09	25.59 + a
----ROCK SHAFT LINING, CONCRETE, LINING OF SAME AND TUNNEL IN FREE AIR:----		

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16) Brakemen, Trackmen, Tunnel Laborers, Shaft Laborers, Miners Helpers	34.76	25.59 + a
17) Laborers Topside, Cage Tenders, Bellman	34.65	25.59 + a
18) Miners	35.73	25.59 + a
----TUNNELS, CAISSON AND CYLINDER WORK IN COMPRESSED AIR: ----		
18a) Blaster	42.22	25.59 + a
19) Brakemen, Trackmen, Groutman, Laborers, Outside Lock Tender, Gauge Tenders	42.02	25.59 + a
20) Change House Attendants, Powder Watchmen, Top on Iron Bolts	40.04	25.59 + a
21) Mucking Machine Operator, Grout Boss, Track Boss	42.81	25.59 + a
----TRUCK DRIVERS----(*see note below)		
Two Axle Trucks, Helpers	32.16	30.51 + a
Three Axle Trucks; Two Axle Ready Mix	32.27	30.51 + a
Three Axle Ready Mix	32.33	30.51 + a
Four Axle Trucks	32.39	30.51 + a
Four Axle Ready-Mix	32.44	30.51 + a

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Heavy Duty Trailer (40 tons and over)	34.66	30.51 + a
Specialized earth moving equipment other than conventional type on-the road trucks and semi-trailer (including Euclids)	32.44	30.51 + a
Heavy Duty Trailer (up to 40 tons)	33.39	30.51 + a
Snorkle Truck	32.54	30.51 + a
----POWER EQUIPMENT OPERATORS----		
Group 1: Crane Handling or Erecting Structural Steel or Stone, Hoisting Engineer (2 drums or over). (Trade License Required)	52.78	27.80 + a
Group 1a: Front End Loader (7 cubic yards or over); Work Boat 26 ft. and over.	48.37	27.80 + a
Group 2: Cranes (100 ton rate capacity and over); Bauer Drill/Caisson. (Trade License Required)	52.41	27.80 + a
Group 2a: Cranes (under 100 ton rated capacity).	51.51	27.80 + a
Group 2b: Excavator over 2 cubic yards; Pile Driver (\$3.00 premium when operator controls hammer).	48.0	27.80 + a
Group 3: Excavator; Gradall; Master Mechanic; Hoisting Engineer (all types of equipment where a drum and cable are used to hoist or drag material regardless of motive power of operation), Rubber Tire Excavator (Drott-1085 or similar); Grader Operator; Bulldozer Fine Grade (slopes, shaping, laser or GPS, etc.). (Trade License Required)	47.1	27.80 + a
Group 4: Trenching Machines; Lighter Derrick; CMI Machine or Similar; Koehring Loader (Skooper).	46.64	27.80 + a
Group 5: Specialty Railroad Equipment; Asphalt Paver; Asphalt Spreader; Asphalt Reclaiming Machine; Line Grinder; Concrete Pumps;	45.92	27.80 + a

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Drills with Self Contained Power Units; Boring Machine; Post Hole Digger; Auger; Pounder; Well Digger; Milling Machine (over 24" mandrel)

Group 5 continued: Side Boom; Combination Hoe and Loader; Directional Driller. 45.92 27.80 + a

Group 6: Front End Loader (3 up to 7 cubic yards); Bulldozer (rough grade dozer). 45.55 27.80 + a

Group 7: Asphalt Roller; Concrete Saws and Cutters (ride on types); Vermeer Concrete Cutter; Stump Grinder; Scraper; Snooper; Skidder; Milling Machine (24" and under Mandrel) 45.14 27.80 + a

Group 8: Mechanic, Grease Truck Operator, Hydroblaster, Barrier Mover, Power Stone Spreader; Welder; Work Boat under 26 ft.; Transfer Machine. 44.67 27.80 + a

Group 9: Front End Loader (under 3 cubic yards), Skid Steer Loader regardless of attachments (Bobcat or Similar); Fork Lift, Power Chipper; Landscape Equipment (including hydroseeder), Vacuum Excavation Truck and Hydrovac Excavation Truck (27 HG pressure or greater). 44.14 27.80 + a

Group 10: Vibratory Hammer, Ice Machine, Diesel and Air Hammer, etc. 41.69 27.80 + a

Group 11: Conveyor, Earth Roller; Power Pavement Breaker (whiphammer), Robot Demolition Equipment. 41.69 27.80 + a

Group 12: Wellpoint Operator. 41.61 27.80 + a

Group 13: Compressor Battery Operator. 40.92 27.80 + a

Group 14: Elevator Operator; Tow Motor Operator (Solid Tire No Rough Terrain). 39.54 27.80 + a

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Group 15: Generator Operator; Compressor Operator; Pump Operator; Welding Machine Operator; Heater Operator.	39.06	27.80 + a
Group 16: Maintenance Engineer.	38.28	27.80 + a
Group 17: Portable Asphalt Plant Operator; Portable Crusher Plant Operator; Portable Concrete Plant Operator., Portable Grout Plant Operator, Portable Water Filtration Plant Operator.	43.46	27.80 + a
Group 18: Power Safety Boat; Vacuum Truck; Zim Mixer; Sweeper; (minimum for any job requiring CDL license).	40.54	27.80 + a

****NOTE: SEE BELOW**

----LINE CONSTRUCTION----(Railroad Construction and Maintenance)----

20) Lineman, Cable Splicer, Technician	48.19	6.5% + 22.00
21) Heavy Equipment Operator	42.26	6.5% + 19.88
22) Equipment Operator, Tractor Trailer Driver, Material Men	40.96	6.5% + 19.21
23) Driver Groundmen	26.5	6.5% + 9.00
23a) Truck Driver	40.96	6.5% + 17.76

----LINE CONSTRUCTION----

24) Driver Groundmen	30.92	6.5% + 9.70
25) Groundmen	22.67	6.5% + 6.20

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26) Heavy Equipment Operators	37.1	6.5% + 10.70
27) Linemen, Cable Splicers, Dynamite Men	41.22	6.5% + 12.20
28) Material Men, Tractor Trailer Drivers, Equipment Operators	35.04	6.5% + 10.45

Welders: Rate for craft to which welding is incidental.

**Note: Hazardous waste removal work receives additional \$1.25 per hour for truck drivers.*

***Note: Hazardous waste premium \$3.00 per hour over classified rate*

Crane with 150 ft. boom (including jib) - \$1.50 extra

Crane with 200 ft. boom (including jib) - \$2.50 extra

Crane with 250 ft. boom (including jib) - \$5.00 extra

Crane with 300 ft. boom (including jib) - \$7.00 extra

Crane with 400 ft. boom (including jib) - \$10.00 extra

All classifications that indicate a percentage of the fringe benefits must be calculated at the percentage rate times the "base hourly rate".

Apprentices duly registered under the Commissioner of Labor's regulations on "Work Training Standards for Apprenticeship and Training Programs" Section 31-51-d-1 to 12, are allowed to be paid the appropriate percentage of the prevailing journeymen hourly base and the full fringe benefit rate, providing the work site ratio shall not be less than one full-time journeyman instructing and supervising the work of each apprentice in a specific trade.

~~Connecticut General Statute Section 31-55a: Annual Adjustments to wage rates by contractors doing state work
~~

The Prevailing wage rates applicable to this project are subject to annual adjustments each July 1st for the duration of the project.

Each contractor shall pay the annual adjusted prevailing wage rate that is in effect each July 1st, as posted by the Department of Labor.

It is the contractor's responsibility to obtain the annual adjusted prevailing wage rate increases directly from the Department of Labor's website.

The annual adjustments will be posted on the Department of Labor's Web page:

www.ct.gov/dol. For those without internet access, please contact the division listed below.

The Department of Labor will continue to issue the initial prevailing wage rate schedule to the Contracting Agency for the project.

All subsequent annual adjustments will be posted on our Web Site for contractor access.

Contracting Agencies are under no obligation pursuant to State labor law to pay any increase due to the annual adjustment provision.

Effective October 1, 2005 - Public Act 05-50: any person performing the work of any mechanic, laborer, or worker shall be paid prevailing wage

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All Person who perform work ON SITE must be paid prevailing wage for the appropriate mechanic, laborer, or worker classification.

All certified payrolls must list the hours worked and wages paid to All Persons who perform work ON SITE regardless of their ownership i.e.: (Owners, Corporate Officers, LLC Members, Independent Contractors, et. al)

Reporting and payment of wages is required regardless of any contractual relationship alleged to exist between the contractor and such person.

~~Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clause (29 CFR 5.5 (a) (1) (ii)).

Please direct any questions which you may have pertaining to classification of work and payment of prevailing wages to the Wage and Workplace Standards Division, telephone (860)263-6790.