

COPY NO. _____

**SEWER SYSTEM REHABILITATION
PROJECT 2
BID NO. 6279**

TOWN OF TRUMBULL, CONNECTICUT

**BIDDING AND CONTRACT
REQUIREMENTS AND SPECIFICATIONS**

MARCH 2018

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TRUMBULL, CONNECTICUT
BIDDING AND CONTRACT REQUIREMENTS
AND SPECIFICATIONS
FOR
SEWER SYSTEM REHABILITATION
PROJECT 2

BID NO. 6279

MARCH 2018



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ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

- A. *Bidder*-The individual or entity who submits a Bid directly to Owner.
- B. *Issuing Office* – The office from which the Bidding Documents are to be issued.

ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

- 2.01 Complete sets of the Bidding Documents may be obtained from the Issuing Office in the number and format stated in the advertisement or invitation to bid.
- 2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- 2.03 Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.

ARTICLE 3 – QUALIFICATIONS OF BIDDERS

- 3.01 To demonstrate Bidder's qualifications to perform the Work, each Bidder must submit with its bid a completed Experience Statement (Section 00405) and such other data as may be called for below or in the Supplementary Conditions. Each Bid must contain evidence of the Bidders qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of contract.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.
- 3.04 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.
- 3.05 Bidders must be prequalified through the Connecticut Department of Administrative Services in the classification of Sewer and Water Lines and must submit with their bid a copy of their Prequalification Certificate and a copy of their project specific Update (Bid) Statement.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 *Existing Site Conditions*

- A. Subsurface and Physical Conditions; Hazardous Environmental Conditions
 - 1. The Supplementary Conditions identify:
 - a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
 - b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
 - c. Technical Data contained in such reports and drawings.
 - 2. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions or information contained in such reports or shown or indicated in such drawings.
 - 3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
- B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site are set forth in the Contract Documents and are based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.
- C. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work appear in Paragraph 4.06 of the General Conditions.

4.03 *Site Visit and Testing by Bidders*

- A. Bidder shall conduct the required Site visit during normal working hours, and shall not disturb any ongoing operations at the Site.
- B. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- C. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site.

D. Bidder shall comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.

4.04 *Owner's Safety Program*

A. Site visits and work at the Site may be governed by an Owner safety program. As the General Conditions indicate, if an Owner safety program exists, it will be noted in the Supplementary Conditions.

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01 It is the responsibility of each Bidder before submitting a Bid to:

- A. examine and carefully study the Bidding Documents, and any data and reference items identified in the Bidding Documents;
- B. visit the Site, conduct a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfy itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;
- C. become familiar with and satisfy itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work;
- D. Not Used
- E. consider the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs;
- F. agree, based on the information and observations referred to in the preceding paragraph, that at the time of submitting its Bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;
- G. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;
- H. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
- I. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder;

- J. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work; and
- K. agree that the submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 6 – PRE-BID MEETING

- 6.01 A highly recommended pre-Bid Meeting will be held for General Bidders at the Trumbull Town Hall at the date and time identified in the General Instructions to Bidders. Representative of the Owner and Engineer will be present to discuss the Project. Attendance by any prospective proposer should be there. If not you may be disqualified from Bidding. This will be the only time visits can be made to the project site. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

ARTICLE 7 – INTERPRETATIONS AND ADDENDA

- 7.01 All technical questions about the meaning or intent of the Bidding Documents are to be submitted in writing to Wright-Pierce, Consulting Engineers, Nicole Ouimet (860-343-8297) (Nicole.ouimet@wright-pierce.com) or Fred Micha, Town of Trumbull, Engineering Department, (203-452-5050) (fmicha@trumbull-ct.gov). All other questions shall be directed to Kevin Bova (203-452-5042) (Kbova@trumbull-ct.gov).
- 7.02 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all parties recorded as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.
- 7.03 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer. Bidders are responsible for determining that they have received all Addenda issued. Any notice of addendum shall be published on the Town website (www.trumbull-ct.gov) in the Purchasing Department Section (Bid Notices) and from Digiprint. Submission of a response that does not address any changes or addendums may result in a disqualification of a proposal submission.

ARTICLE 8 – BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 10% of Bidder's maximum Bid price and in the form of a certified or bank check or a Bid Bond on the

form attached issued by a surety meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions.

- 8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 60 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.
- 8.03 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within seven days after the Bid opening.
- 8.04 All Bid Securities will be returned on the execution of the Agreement or if no award is made, within sixty days, excluding Saturdays, Sundays, and legal holidays after the actual date of opening of the General Bids, unless forfeited under the conditions herein stipulated.

ARTICLE 9 – CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 – LIQUIDATED DAMAGES

- 10.01 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 11 – SUBSTITUTE AND “OR-EQUAL” ITEMS

11.01

11.02

ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 12.01 If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, individuals, or entities to be submitted to Owner in advance of a specified date prior to the Effective Date of the Agreement, the apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of all such Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, individual, or entity if requested by Owner. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit a substitute, without an increase in the bid.

- 12.02 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 6.06 of the General Conditions.
- 12.03 Contractor shall not be required to employ any Subcontractor, Supplier, individual, or entity against whom Contractor has reasonable objection.

ARTICLE 13 – PREPARATION OF BID

- 13.01 The Bid Form is included with the Bidding Documents.
- 13.02 All blanks on the Bid form shall be completed by printing in ink or by typewriter and the bid form must be fully completed and executed when submitted and the Bid signed. Please be advised that the person signing the Bid must be authorized by your organization to contractually bind your firm with regard to prices and related contractual obligations for the subject project and for the contractual period requested. A Bid price shall be indicated for each Bid item listed therein.
- 13.03 A Bid by a corporation shall be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.
- 13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.
- 13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.
- 13.06 A Bid by an individual shall show the Bidder's name and official address.
- 13.07 A Bid by a joint venture shall be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.
- 13.08 All names shall be printed in ink below the signatures.
- 13.09 The Bid shall contain an acknowledgment of all Addenda, the numbers of which shall be filled in on the Bid Form, including date issued. Bidder shall be responsible for obtaining and acknowledging any and all Addenda prior to submitting a Bid.
- 13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.
- 13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 – BASIS OF BID

14.01 Lump Sum with Unit Prices and Alternates

- A. Bidders shall submit a Bid on a lump sum basis for each lump sum item, and on a unit price basis for each unit price item, for the base Bid and include a separate price for each alternate described in the Bidding Documents and as provided for in the Bid Form. The price for each alternate will be the amount added to or deleted from the base Bid if Owner selects the alternate.
- B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form.
- C. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity" (which Owner or its representative has set forth in the Bid Form) for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.
- D. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. The Town reserves the right to correct, after proper verification, any mistake in a proposal that is a clerical error, such as a price extension or a decimal point error.
- E. The Bid price shall include such amounts as the Bidder deems proper for overhead and profit on account of cash allowances, if any, named in the Contract Documents as provided in Paragraph 11.02 of the General Conditions.

ARTICLE 15 – SUBMITTAL OF BID

- 15.01 Deleted.
- 15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation "SEWER SYSTEM REHABILITATION, PROJECT 2." A mailed Bid shall be addressed with the proposal number, date, and to the Owner's mailing address indicated on the Bid Form.
- 15.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 16 – MODIFICATION AND WITHDRAWAL OF BID

- 16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids.

ARTICLE 17 – OPENING OF BIDS

17.01 Responses to this request shall be received at the office of the Purchasing Agent, Town Hall, prior to the advertised time and place (indicated in the advertisement or invitation to Bid) of opening, at which time all proposals (total proposal amount only) shall be publicly read aloud.

ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to be non-responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder. The Town reserves the right to cancel the Bid if funding is not approved. The Purchasing agent from Town Hall will issue notification of award in writing.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award. A Bid which includes a Bid Price, for any Item, that is abnormally low or high may be rejected as unbalanced.

19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.

19.06 If the Contract is to be awarded, Owner will award the Contract to the responsible Bidder whose Bid, conforming with all the material terms and conditions of the Instructions to Bidders, is lowest, price and other factors considered.

19.07 Evaluation of Bids

A. In evaluating Bids, Owner will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

- B. For the determination of the apparent low Bidder, Bids will be compared on the basis of the Total Bid
- C. In evaluating the Bids the Owner may required a Pre Award meeting for any of the Bids submitted. The necessity of this meeting will be at the Owners discretion and the necessity of meeting with one or multiple qualified Bidders will be decided by the Owner.

19.08 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the Agreement (executed by Successful Bidder) to Owner, it shall be accompanied by required bonds and insurance documentation.

ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When Owner issues a Notice of Award to the Successful Bidder, it shall be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 daysthereafter, Successful Bidder shall execute and deliver the required number of counterparts of the Agreement (and any bonds and insurance documentation required to be delivered by the Contract Documents) to Owner. Within ten days thereafter, Owner shall deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents.

ARTICLE 22 – SALES AND USE TAXES

The Contractor's attention is called to Regulation 18 as amended, promulgated by the Sales and Use Tax Division of the State Department of Revenue Services, which provided for the exemption of the sales and use tax on the purchase of such materials and supplies as are to be physically incorporated in and become a permanent part of the project being performed under this contract. The contractor may avail himself of the savings of this tax and shall take this exemption into account in calculating his bid for this work. The Contractor or Subcontractor shall furnish his suppliers with a completed certificate, the form of which is provided in the Supplementary Conditions.

ARTICLE 23 – CONTRACTS TO BE ASSIGNED

Not Used

ARTICLE 24 – PARTNERING

ARTICLE 25 – DELETION OF ITEMS

25.01 Owner reserves the right to reduce project scope by the elimination of Bid items, reduction of quantities on unit price Bid items, or deleting elements of lump sum Bid items. No adjustment to other Bid items prices will be permitted. In the case of reduction of quantities on unit price

items, the unit price will not be adjusted. Such adjustments to project scope will be determined prior to award of the Contract and will be negotiated with the apparent Successful Bidder only. If such negotiations are not satisfactory to Owner, Owner will reject all Bids

ARTICLE 26 – SPECIAL LEGAL REQUIREMENTS

- 26.01 Department of Labor Regulations: The Contractor must comply with all the Safety and Health Regulations (CFR29 Part 1926 and all subsequent amendments) as promulgated by the US Department of Labor on June 24, 1974; the Department of Labor Regulations relating to Copeland "Anti-Kickback Act (18 U.S.C. 874) as supplemented by 29 CFR Part 3; Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by 29 CFR Part 5, and Occupational Safety and Health Standards (OSHA) (29 CFR Part 1910). Contractors are urged to become familiar with the requirements of these regulations.
- 26.02 Environmental Regulations: The Contractor must comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857(h)), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738 and Environmental Protection Agency regulations (40 CFR Part 15). Contractors are urged to become familiar with the requirements of these regulations.
- 26.03 Wage Rates: The Work under this contract is subject to minimum Wage Rates. Refer to the Supplementary Conditions for additional information.

END OF SECTION

SECTION 00310

BID FORM

PROJECT IDENTIFICATION: Town of Trumbull, Connecticut
Sewer System Rehabilitation
Project 2
Bid Number: 6279

THIS BID IS SUBMITTED TO: Purchasing Agent
Trumbull Town Hall
5866 Main Street
Trumbull, CT 06611

ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid is submitted to the Owner, as identified above.
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

- 2.01 Bidder accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner. Bidder will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen days after the date of Owner's Notice of Award.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:
 - A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum, Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

- D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. The Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over Owner.
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder understands that the Owner reserves the right to reject any or all bids.
- D. Bidder understands that, if the contract is to be awarded, it will be awarded to the lowest responsive, responsible bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.
- E. The bid security attached in the amount of ten percent of the Total Bid is to become the property of the Owner in the event the contract and bond are not executed within the time

above set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

- F. The Owner reserves the right, either before or after opening of proposals, to ask any Bidder to clarify its Bid or to submit additional information that the Owner, in its sole discretion, deems desirable.
- G. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- H. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.H:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

UNIT PRICE SCHEDULE

Item No.	Estimated Quantity	Brief Description of Item with Unit Price in Words	Unit Price In Figures	Total Estimated Price In Figures
1	Lump Sum	Mobilization/Demobilization The sum of \$ _____	\$ _____	\$ _____
		Per Lump Sum		
2	2 Each	Replace Manhole Frame and Cover The sum of \$ _____	\$ _____	\$ _____
		Per Each		

Item No.	Estimated Quantity	Brief Description of Item with Unit Price in Words	Unit Price In Figures	Total Estimated Price In Figures
3	39 Each	Seal Manhole		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per Each		
4	7 Each	Line Manhole Chimney		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per Each		
5	208 Each	Test and Seal Pipe Joints- 8" Pipe		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per Each		
6	3 Each	Test and Seal Pipe Joints- Lateral		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per Each		
7	1 Each	Spot Lining – 8" Pipe		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per Each		

Item No.	Estimated Quantity	Brief Description of Item with Unit Price in Words	Unit Price In Figures	Total Estimated Price In Figures
8	2 Each	Spot Lining – 12" Pipe		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per Each		
9	535 LF	Chemical Root Control (all pipe sizes)		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per LF		
10*	300 LF	Heavy Cleaning of 8" – 18" Pipes		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per LF		
11		Uniformed Police Officer		
		The sum of \$ <u>Five Thousand Dollars</u> <u>And Zero Cents</u>	\$ <u>5,000.00</u>	\$ <u>5,000.00</u>
		_____	_____	_____
		Allowance		
12	Lump Sum	Traffic Control		
		The sum of \$ _____	\$ _____	\$ _____
		_____	_____	_____
		Per Lump Sum		

- * Indeterminate quantities assumed for comparison of bids. Quantities are not guaranteed. Payment will be based on actual quantities constructed.

TOTAL Bid Price: Total of Items 1 through 12 above.

_____ (\$_____)

_____ (use figures)

(use words)

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
 - A. This Bid Form in its Entirety.
 - B. Required Bid security;
 - C. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;
 - D. Required Bidder Qualifications Statement (Section 00405) with supporting data; and
 - E. Signed Certification of Bidder Regarding Equal Employment Opportunity (Section 00406)
 - F. Non-Collusion Affidavit of Prime Bidder (Section 00408)
 - G. A tabulation of Subcontractors, Suppliers and other persons and organizations required to be identified in this Bid.

ARTICLE 8 – DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER:

By:

[Signature]

[Printed name]

(If Bidder is a corporation, a limited liability company, a partnership, a sole proprietorship, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature]

[Printed name]

Title:

Submittal Date:

Address for giving notices:

Telephone Number:

Fax Number:

Contact Name and e-mail address:

Bidder's License No.:

(where applicable)

SECTION 00405QUALIFICATIONS STATEMENT

THE INFORMATION SUPPLIED IN THIS DOCUMENT IS CONFIDENTIAL TO THE EXTENT
PERMITTED BY LAWS AND REGULATIONS

1. SUBMITTED BY:

Official Name of Firm:

Address:

2. SUBMITTED TO:Town of Trumbull, Connecticut**3. SUBMITTED FOR:**Sewer System Rehabilitation: Project 2

TYPE OF WORK:

Rehabilitation of manholes and pipelines throughout the Town's sewer system.

4. CONTRACTOR'S CONTACT INFORMATION

Contact Person:

Title:

Phone:

Email:

5. AFFILIATED COMPANIES:

Name:

Address:

6. TYPE OF ORGANIZATION: SOLE PROPRIETORSHIP

Name of Owner:

Doing Business As:

Date of Organization: _____

CORPORATION

State of Organization: _____

Date of Organization: _____

Executive Officers:

- President: _____

- Vice President(s): _____

- Treasurer: _____

- Secretary: _____

LIMITED LIABILITY COMPANY

State of Organization: _____

Date of Organization: _____

Members:

JOINT VENTURE

Sate of Organization: _____

Date of Organization: _____

Form of Organization: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

Joint Venture Managing Partner

- Name: _____

- Address: _____

7. LICENSING

Jurisdiction: _____

Type of License: _____

License Number: _____

8. CERTIFICATIONS

CERTIFIED BY:

Disadvantage Business Enterprise: _____

Minority Business Enterprise: _____

Woman Owned Enterprise: _____

Small Business Enterprise: _____

Other (_____): _____

9. BONDING INFORMATION

Bonding Company: _____

Address: _____

Bonding Agent: _____

Address: _____

Contact Name: _____

Phone: _____

Aggregate Bonding Capacity: _____

Available Bonding Capacity as of date of this submittal: _____

10. FINANCIAL INFORMATION

Financial Institution: _____

Address: _____

Account Manager: _____

Phone: _____

Do you grant Engineer permission to contact this (these) institutions?

YES NO

11. CONSTRUCTION EXPERIENCE:

Current Experience:

List on Schedule A all uncompleted projects currently under contract (If Joint Venture list each participant's projects separately).

Previous Experience:

List on Schedule B all projects completed within the last 5 Years (If Joint Venture list each participant's projects separately).

Has firm listed in Section 1 ever failed to complete a construction contract awarded to it?

YES NO

If YES, attach as an Attachment details including Project Owner's contact information.

Has any Corporate Officer, Partner, Joint Venture participant or Proprietor ever failed to complete a construction contract awarded to them in their name or when acting as a principal of another entity?

YES NO

If YES, attach as an Attachment details including Project Owner's contact information.

Are there any judgments, claims, disputes or litigation pending or outstanding involving the firm listed in Section 1 or any of its officers (or any of its partners if a partnership or any of the individual entities if a joint venture)?

YES NO

If YES, attach as an Attachment details including Project Owner's contact information.

12. SAFETY PROGRAM:

Name of Contractor's Safety Officer: _____

Provide the following information for the last 3 full calendar years:

Workers' compensation Experience Modification Rate (EMR):

YEAR _____	EMR _____
YEAR _____	EMR _____
YEAR _____	EMR _____

Total Recordable Frequency Rate (TRFR):

YEAR _____	TRFR _____
YEAR _____	TRFR _____
YEAR _____	TRFR _____

Total number of man-hours worked:

YEAR _____	TOTAL NUMBER OF MAN-HOURS _____
YEAR _____	TOTAL NUMBER OF MAN-HOURS _____
YEAR _____	TOTAL NUMBER OF MAN-HOURS _____

13. EQUIPMENT:

MAJOR EQUIPMENT:

List on Schedule C all pieces of major equipment available for use on Owner's Project.

14. MAJOR SUBCONTRACTORS:

Identify any subcontractors that will represent a subcontract value estimated at greater than \$750,000.

Earthwork/ Site Work Subcontractor: _____

Blasting Subcontractor: _____

Support of Excavation Subcontractor: _____

Concrete Subcontractor: _____

Mechanical/ HVAC Subcontractor: _____

Mechanical/ Plumbing Subcontractor: _____

Instrumentation Subcontractor: _____

Electrical Subcontractor: _____

I HEREBY CERTIFY THAT THE INFORMATION SUBMITTED HEREWITH, INCLUDING ANY ATTACHMENTS, IS TRUE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME OF ORGANIZATION: _____

BY: _____

TITLE: _____

DATED: _____

NOTARY ATTEST:

SUBSCRIBED AND SWORN TO BEFORE ME

THIS _____ DAY OF _____, 20____

NOTARY PUBLIC - STATE OF _____

MY COMMISSION EXPIRES: _____

REQUIRED ATTACHMENTS

1. Schedule A (Current Experience).
2. Schedule B (Previous Experience).
3. Schedule C (Major Equipment).
4. Evidence of authority to do business in the State.
5. Evidence of authority for individuals listed in Section 6 to bind organization to an agreement.
6. Resumes of officers and key individuals, including Safety Officer, of firm named in Section 1.
7. Additional items as pertinent.

SCHEDULE A

CURRENT EXPERIENCE

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE B

PREVIOUS EXPERIENCE (Include ALL Projects Completed within last 5 years)

Project Name	Owner's Contact Person	Design Engineer	Contract Date	Type of Work	Status	Cost of Work
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				
	Name: Address: Telephone:	Name: Company: Telephone:				

SCHEDULE C - LIST OF MAJOR EQUIPMENT AVAILABLE

SECTION 00406

CERTIFICATION OF BIDDER REGARDING
EQUAL EMPLOYMENT OPPORTUNITY

INSTRUCTIONS

This certification is related to Connecticut's Executive Order No. Three. This statement relates to a proposed contract with the Town of Trumbull, Connecticut. The bidder shall state as an initial part of the bid whether it has participated in any previous contract or subcontract subject to the equal opportunity clause; and if so, whether it has filed all compliance reports due under applicable instructions.

Where the certification indicates that the bidder has not filed a compliance report due under applicable instructions, such bidder, if the Successful Bidder, shall not be eligible and will not be eligible to enter into the proposed contract unless and until such reports are filed in a manner that is satisfactory to the Commission on Human Rights and Opportunities. Such reports shall be filed within seven days of notice of award.

CERTIFICATION BY BIDDER

Bidder's Name: _____

Address and Zip Code: _____

1. Bidder has participated in a previous contract or subcontract subject to Executive Order No. Three (regarding equal employment opportunity) or a preceding similar Executive Order.

Yes _____ No _____ (If answer is yes, identify the most recent contract.)

2. If Yes, all required compliance reports were filed in connection with such contract or subcontract.

Yes _____ No _____

3. Bidder has a written Affirmative Action Plan.

Yes _____ No _____

4. This plan has been approved by the Connecticut Commission on Human Rights and Opportunities.

Yes _____ No _____

5. Bidder has an apprenticeship program complying with Sections 46a-68-1 to 46a-68-17, inclusive, of the Regulations of Connecticut State Agencies.

Yes No

The information above is true and complete to the best of my knowledge and belief.

Name and Title of Signer (Please Type)

Signature

Date

END OF SECTION

SECTION 00408

NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of: _____

County of: _____

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

1. Bidder is _____ of _____, the Bidder that has submitted the attached Bid;
2. Bidder is 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 of parties of interest, including this affiant, 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 of the Bid price or the Bid price of any Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement of any advantage against the Town of Trumbull, Connecticut 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 affiant.

(Signed) _____

(Title) _____

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

(Title) _____

My Commission Expires on _____

END OF SECTION

SECTION 00410

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (Name and Address):

SURETY (Name, and Address of Principal Place of Business):

OWNER (Name and Address):

BID

Bid Due Date:

Description (Project Name—Include Location):

BOND

Bond Number:

Date:

Penal sum

_____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

(Seal)

(Seal)

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By:

By:

Signature

Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest:

Attest:

Signature

Signature

Title

Title

Note: Addresses are to be used for giving any required notice.

Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.

2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.

3. This obligation shall be null and void if:

3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or

3.2 All Bids are rejected by Owner, or

3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).

4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.

5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.

6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.

7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.

8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.

9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.

10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.

11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

SECTION 00510

SUGGESTED FORM OF AGREEMENT
BETWEEN OWNER AND CONTRACTOR
FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

The Work involves rehabilitation of manholes and pipelines throughout the Town's sewer system including, but not limited to; cleaning, sealing, and lining of manholes, frame and cover replacement and adjustment; lining sections of gravity sewer mains, testing and sealing of pipe joints and laterals, chemical grouting of gravity sewer mains; and pavement and lawn restoration, and appurtenant work.

ARTICLE 2 – THE PROJECT

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Town of Trumbull, Connecticut

Sewer System Rehabilitation

Project 2

ARTICLE 3 – ENGINEER

3.01 The Project has been designed by **Wright-Pierce Engineers** (Engineer), which is to act as Owner's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Days to Achieve Substantial Completion and Final Payment*

A. The Work will be substantially completed within 120 days after the date when the Contract Times commence to run as provided in Paragraph 2.03 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions within 150 days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay Owner \$1,500.00 for each day that expires after the time specified in Paragraph 4.02 above for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner \$1,500.00 for each calendar day that expires after the time specified in Paragraph 4.02 above for completion and readiness for final payment until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A below:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 30th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or Owner may withhold, including but not limited to liquidated damages, in accordance with the General Conditions:
 - a. 95 percent of payment claimed until Work is satisfactorily completed to date,
 2. When the work is Substantially Complete (operational or beneficial occupancy), Owner shall pay an amount sufficient to increase total payments to Contractor to the payment claimed, less such amounts as Engineer shall determine as necessary to assure completion in accordance with Paragraph 14.02.B.5 of the General Conditions;
 3. Owner may reinstate up to 5 percent withholding if the Owner or Engineer determines, at its discretion, that the Contractor is not making satisfactory progress or there is other specific cause for such withholding in accordance with Paragraph 14.02.B.5 of the General Conditions; and

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work in accordance with Paragraph 14.07 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07.

ARTICLE 7 – INTEREST

7.01 Not Used.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

8.01 In order to induce Owner to enter into this Agreement, Contractor makes the following representations:

- A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
- B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities), if any, that have been identified in Paragraph SC-4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in Paragraph SC-4.06 of the Supplementary Conditions as containing reliable "technical data."
- E. Contractor has considered the information known to Contractor; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Contract Documents; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in Paragraph 8.01.E above, Contractor does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
- G. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor is financially solvent and that he is experienced in and competent to perform the type of work, or to furnish plant and equipment materials and supplies.
- K. Contractor is familiar with all Federal, State and Municipal laws, ordinances and regulations, which in any way may affect the work of those employed therein.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 8, inclusive).
2. Performance bond (pages 1 to 1, inclusive).
3. Payment bond (pages 1 to 1, inclusive).
4. General Conditions (pages 1 to 62, inclusive).
5. Supplementary Conditions (pages 1 to as well as all attached sections, inclusive).
 - a. Prevailing Wage Rates (pages to , inclusive)
6. Specifications as listed in the table of contents of the Project Manual.
7. Drawings consisting of 4 sheets with each sheet bearing the following general title: Sewer System Rehabilitation
8. Addenda (numbers to , inclusive).
9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages to , inclusive).
 - b. Documentation submitted by Contractor prior to Notice of Award (pages to , inclusive).
10. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed (pages 00811-1, inclusive).
 - b. Work Change Directives.
 - c. Change Orders.

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

- A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are 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 Documents.

10.03 *Successors and Assigns*

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

10.04 *Severability*

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall 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.

10.05 *Contractor's Certifications*

- B. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;

3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

10.06 *Other Provisions*

Not Used

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. Counterparts have been delivered to Owner and Contractor. All portions of the Contract Documents have been signed or have been identified by Owner and Contractor or on their behalf.

This Agreement will be effective on _____ (which is the Effective Date of the Agreement).

OWNER:

By: _____

Title: _____

Attest: _____

Title: _____

Address for giving notices:

(If Owner is a corporation, attach evidence of authority to sign. If Owner is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

Agency: _____

Date: _____

CONTRACTOR

By: _____

Title: _____

(If Contractor is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

Title: _____

Address for giving notices:

License No.: _____
(Where applicable)

Agent for service of process:

By: _____

Title: _____

SECTION 00610

PERFORMANCE BOND

CONTRACTOR (*name and address*):

SURETY (*name and address of principal place of business*):

OWNER (*name and address*):

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description (*name and location*):

BOND

Bond Number:

Date (*not earlier than the Effective Date of the Agreement of the Construction Contract*):

Amount:

Modifications to this Bond Form: None See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

(seal)

By: _____
Signature

Print Name

Title

Attest: _____
Signature

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

Surety's Name and Corporate Seal

(seal)

By: _____
Signature (*attach power of attorney*)

Print Name

Title

Attest: _____
Signature

Title

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

EJCDC® C-610, Performance Bond

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

SECTION 00620

PAYMENT BOND

CONTRACTOR (*name and address*):

SURETY (*name and address of principal place of business*):

OWNER (*name and address*):

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description (*name and location*):

BOND

Bond Number:

Date (*not earlier than the Effective Date of the Agreement of the Construction Contract*):

Amount:

Modifications to this Bond Form: None See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

(*seal*)

Contractor's Name and Corporate Seal

By: _____

Signature

Print Name

Title

Attest:

Signature

SURETY

(*seal*)

Surety's Name and Corporate Seal

By: _____

Signature (*attach power of attorney*)

Print Name

Title

Attest:

Signature

Title

Title

Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

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1 of 3

PROJECT NUMBER

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2 Pay or arrange for payment of any undisputed amounts.
 - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to

related subcontracts, purchase orders, and other obligations.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

16. Definitions

16.1 Claim: A written statement by the Claimant including at a minimum:

1. The name of the Claimant;
2. The name of the person for whom the labor was done, or materials or equipment furnished;
3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
4. A brief description of the labor, materials, or equipment furnished;
5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;

6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;

7. The total amount of previous payments received by the Claimant; and

8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.

16.2 Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

16.3 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

16.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

16.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

18. Modifications to this Bond are as follows:

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

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

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CONSTRUCTION SPECIFICATIONS INSTITUTE

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor (EJCDC C-520 or C-525, 2007 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the Narrative Guide to the EJCDC Construction Documents (EJCDC C-001, 2007 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (EJCDC C-800, 2007 Edition).

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.
10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given 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 under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *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.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *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 at the Site.
44. *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 thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, 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 Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *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, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 *Terminology*

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives:*

1. 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 Paragraph 9.09 or any other provision of the Contract Documents.

C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that:

- does not conform to the Contract Documents; or
- does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
- 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 14.04 or 14.05).

E. *Furnish, Install, Perform, Provide:*

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean 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, shall mean 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, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
4. When "furnish," "install," "perform," or "provide" is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, "provide" is implied.

F. 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 Bonds and Evidence of Insurance*

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement 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 Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

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

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;
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.

2.06 *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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.07 *Initial 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 for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall 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 component parts of the Work.

ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one 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. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement 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, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, 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 Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
 - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
 1. A Field Order;
 2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

- A. Contractor and any Subcontractor or Supplier 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 editions; or
 2. 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.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor 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. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the

Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- 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 the Work is to be performed 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.

4.02 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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; or
 - 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.

4.03 *Differing Subsurface or Physical Conditions*

- A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:
 - 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or
 - 2. is of such a nature as to require a change in the Contract Documents; or

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 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition 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 meet any one or more of the categories described in Paragraph 4.03.A; and
 - 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 Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
 - a. Contractor knew of the existence of such conditions at the time Contractor made a final 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
 - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all such information and data;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents;
 - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
 - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated:*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract

Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *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.

4.06 *Hazardous Environmental Condition at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "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; or
 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 any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) 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 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. 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, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. 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 or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 – BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds 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 shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.
- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of

insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

5.04 *Contractor's Insurance*

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed 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:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
 - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
 - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
 - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
 - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
 - b. by any other person for any other reason;
 - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
 - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
 - a. Such insurance shall remain in effect for two years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
5. allow for partial utilization of the Work by Owner;
6. include testing and startup; and
7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property

insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their 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 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 Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (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. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. 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:

1. loss 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 perils whether or not insured by Owner; and
2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery

against Contractor, Subcontractors, or Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

6.01 *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. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

6.02 *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 at all times maintain good discipline and order at the Site.
- B. 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 shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *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.
- B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall 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 shall 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.

6.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
 2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and “Or-Equals”*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
 1. *“Or-Equal” Items:* If in Engineer’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it 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; and
 - 3) it has a proven record of performance and availability of responsive service.
 - b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - 1) shall certify that the proposed substitute item will:
 - a) perform adequately the functions and achieve the results called for by the general design,
 - b) be similar in substance to that specified, and
 - c) be suited to the same use as that specified;
 - 2) will state:
 - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
 - b) 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
 - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
 - 3) will identify:
 - a) all variations of the proposed substitute item from that specified, and
 - b) available engineering, sales, maintenance, repair, and replacement services; and

- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.

B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.

F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or

other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (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 any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *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 a particular 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 shall be disclosed by Owner 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.

6.08 *Permits*

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. 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 opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *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. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 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.

6.11 Use of Site and Other Areas

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

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. 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 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 by or based upon Contractor's performance of the Work.

B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall 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 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 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 property to stresses or pressures that will endanger it.

6.12 *Record Documents*

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

6.13 *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. 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. 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. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.

- D. 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.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.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 (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).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of 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.

6.16 *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 threatened 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 thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will 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 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. 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 6.17.D.

B. 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. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.
3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop

Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. 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, conform to the information given in 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 (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures:

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.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *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 and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper 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.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

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 or the issuance of a notice of acceptability by Engineer;
6. any inspection, test, or approval by others; or
7. any correction of defective Work by Owner.

6.20 *Indemnification*

A. 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 performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury 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 6.20.A shall 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.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 – OTHER WORK AT THE SITE

7.01 *Related Work at Site*

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
 - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
 - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

7.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
 - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
 - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
 - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

ARTICLE 8 – OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

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

8.02 *Replacement of Engineer*

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

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

8.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

8.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *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.

8.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *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 Documents.

8.12 *Compliance with Safety Program*

- 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 pursuant to Paragraph 6.13.D.

ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *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 Documents.

9.02 *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 9.09. 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.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

- A. 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, subject to the provisions of Paragraph 10.05.

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

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents 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 shall 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 Paragraph 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 *Compliance with Safety Program*

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

10.01 *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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
2. changes in the 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; and
3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *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.

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The

opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part;
2. approve the Claim; or
3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall 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. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on

Saturday, Sunday, or legal holidays, shall 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 shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall 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, who 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 shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including 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, and hand tools not owned by the workers, 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.
 - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the 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 property insurance established in accordance with Paragraph 5.06.D), 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 shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall 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 telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.

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

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, 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 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. 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.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 *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:*

1. Contractor agrees that:

- a. 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
- b. 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 on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a 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 on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 *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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- 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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
2. there is no corresponding adjustment with respect to any other item of Work; and
3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for 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, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall 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 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five 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 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, 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 the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor,

then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will 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 therewith as applicable.

13.03 *Tests and Inspections*

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
 - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
 - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
 - 3. as otherwise specifically provided in the Contract Documents.

- 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 and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. 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.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay 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 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. 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, or both, 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, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *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, 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 shall 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.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay 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 correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *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 terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If 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. 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 correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- C. 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.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, 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.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay 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) 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 pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *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 rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, 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 (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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. *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. 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 shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the

Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. *Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, 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 9.07, 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 Documents; 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, or

- b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
- c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
- d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, 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 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due:

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment:

1. Owner may refuse to make payment of the full amount recommended by Engineer because:
 - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
 - b. 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;
 - c. there are other items entitling Owner to a set-off against the amount recommended; or

- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

14.03 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 *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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- 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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities

pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

- E. 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 tentative list.

14.05 *Partial Utilization*

- 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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04.A through D for that part of the Work.
 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

14.06 *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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
 - b. consent of the surety, if any, to final payment;
 - c. a list of all Claims against Owner that Contractor believes are unsettled; and
 - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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.

B. *Engineer's Review of Application and Acceptance:*

1. 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 Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. 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. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

- A. The making and acceptance of final payment will constitute:
 1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
 2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

15.01 *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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will 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 established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
3. Contractor's repeated disregard of the authority of Engineer; or
4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
2. 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
3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.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 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed 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.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven 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;
3. 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) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and
4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven 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 15.03.

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, seven 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 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION

16.01 *Methods and Procedures*

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
 2. agrees with the other party to submit the Claim to another dispute resolution process; or
 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 – MISCELLANEOUS

17.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended; or
 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

- A. When any period of time is referred to in the Contract Documents 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.

17.03 *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 Documents. 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.

17.04 *Survival of Obligations*

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

17.05 *Controlling Law*

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

17.06 *Headings*

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

SECTION 00800SUPPLEMENTARY CONDITIONSSupplementary Conditions

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract Funding Agency Edition, EJCDC C-700 (2007 Edition), hereinafter called the General Conditions, and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

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.

Contents of Supplementary Conditions

<u>Section No.</u>	<u>Section Title</u>	<u>Page No.</u>
SC-1 to SC-16	Amendments to General Conditions	00800-1
SC-32	Wage Rates	SC-32-1

SC-1 DEFINITIONS AND TERMINOLOGY

The terms used in these Supplementary Conditions which are defined in the General Conditions have the meanings assigned to them in the General Conditions.

SC-1.01.A.3. APPLICATION FOR PAYMENT

Add the following language to the end of Paragraph 1.01.A.3:

The Application for Payment form to be used on this Project is EJCDC No. C-620 or similar approved format. The Owner must approve all Applications for Payment before payment is made.

SC-1.01.A.9. CHANGE ORDER

Add the following language to the end of Paragraph 1.01.A.9:

The Change Order form to be used on this Project is EJCDC No. C-941.

SC-1.01 A.29 OWNER

Add the following to the end of paragraph 1.29 of the General Conditions:

Owner is referred to as Grantee in certain sections of these Contract Documents. Owner and Grantee are one and the same.

SC-1.01 A.52 NON-RESIDENT CONTRACTOR

Add a new paragraph immediately after paragraph 1.01.A.51 of the General Conditions, which is to read as follows:

52. Non-Resident Contractor -

- a. A person who is not a resident in the State where the proposed construction is to be located, or
- b. Any partnership that has no member thereof resident in the State where the proposed construction is to be located.
- c. Any corporation established under laws other than those of the State in which the proposed construction is located.

SC-1.02.D DEFECTIVE

Insert the following language as paragraph 1.02 D.1.d:

- d. or fails to provide the level of service for which it was intended.

SC-2.02 COPIES OF DOCUMENTS

Delete Paragraph 2.02.A in its entirety and insert the following in its place:

- A. Owner shall furnish to Contractor up to 3 printed or hard copies of the Drawings and Project Manual and one set in electronic pdf format. Additional copies will be furnished upon request at the cost of reproduction.

SC-2.03 COMMENCEMENT OF CONTRACT TIMES; NOTICE TO PROCEED

Delete Paragraph 2.03.A in its entirety and insert the following in its place:

- A. The Contract Times will commence to run 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 Agreement.

SC-2.05 BEFORE STARTING CONSTRUCTION

Add the following as paragraph 2.05.B:

- B. The value of mobilization shall not exceed 2.5 percent of the contract price.

SC-3.01 INTENT

In paragraph 3.01.B, line 2, immediately following the word “constructed”, add the words “by the CONTRACTOR”

Add a new paragraph immediately after Paragraph 3.01 C of the General Conditions which is to read as follows:

- D. Each and every provision of law and clause required by law to be inserted in these Contract Documents shall be deemed to be inserted herein, and they shall be read and enforced as though it were included herein, and if through mistake or otherwise, any such provision is not inserted, or if not correctly inserted, then upon the application of either party, the Contract Documents shall forthwith be physically amended to make such insertion.

SC- 3.03 REPORTING DISCREPANCIES

Add the following to the end of paragraph 3.03.A.1:

Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment which is dependent on the correctness of such information.

Delete Paragraph 3.03.A.3 in its entirety and insert the following in its place:

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 or constructive knowledge thereof.

SC-4.02 SUBSURFACE AND PHYSICAL CONDITIONS

Add the following new paragraph(s) immediately after paragraph 4.02.B:

C. In the preparation of Drawings and Specifications, Engineer or Engineer's Consultants relied upon the following information:

1. DVD's and Reports prepared by Green Mountain Pipeline Services of Royalton, VT. Contractor is responsible for any interpretation or conclusion he/she may draw from any "technical data" or any other data, interpretations, opinions or information contained in such reports.
- D. Copies of information itemized in SC-4.02.C that are not included with Bidding Documents may be examined at Wright-Pierce, 169 Main Street, 700 Plaza Middlesex, Middletown, CT 06457, Tel. (860) 343-8297, during regular business hours. The information is not part of the Contract Documents, and the Contractor is not entitled to rely upon this information.

SC-4.06 HAZARDOUS ENVIRONMENTAL CONDITION AT SITE

Delete Paragraphs 4.06.A and 4.06.B in their entirety and insert the following:

- A. No reports, explorations, tests or drawings of Hazardous Environmental Conditions at the Site are known to the Owner or Engineer.
- B. Not used.

SC-5.01 PERFORMANCE, PAYMENT, AND OTHER BONDS

Add the following new paragraph immediately after paragraph 5.01.C:

- A. The premium on such new or additional bonds shall be paid by the Contractor. No further payment shall be deemed due nor shall be made until new sureties have qualified.

SC-5.04 CONTRACTOR'S INSURANCE

Add the following sentence to the end of Paragraph 5.04.B.4.

“Written notice will be served by registered mail to the Purchasing Agent, Town of Trumbull”

Add the following new paragraph immediately after Paragraph 5.04.B:

C. The successful bidder shall provide the Town Purchasing Agent with a Certificate of Insurance before work commences. The Town shall be named as an additional insured on all policies with Insurance Company licensed to write such insurance in Connecticut, against the following risks and in not less than the following amounts:

- Worker's Compensation
- Comprehensive General Liability and Property Damage
- Automobile Insurance
- All Risk Insurance

General Liability	Each Person	Each Occurrence	Aggregate
Bodily Injury Liability	\$2,000,000	\$2,000,000	\$2,000,000
Property Damage Liability	\$2,000,000	\$2,000,000	\$2,000,000
Personal Injury Liability	\$2,000,000	\$2,000,000	\$2,000,000
Comprehensive Automobile Liability			
Bodily Injury	\$1,000,000	\$1,000,000	\$5,000,000
Property Damage		\$1,000,000	\$1,000,000

SC-5.05 OWNER'S LIABILITY INSURANCE

Delete section 5.05.A in its entirety and insert the following in its place.

5.05 *Owner's and Contractor's Protective Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Contractor must purchase and maintain at Contractors expense Owner's and Contractor's Protective Liability Insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

SC-6.01 SUPERVISION AND SUPERINTENDENCE

Add the following sentences to the end of paragraph 6.01.B of the General Conditions.

It is understood that such representative shall be acceptable to the Town and shall be one whose experience and length of service in this particular kind of work warrants him ability to perform

the duties entailed to the satisfaction of the Engineer, and who can continue in that capacity for the particular job involved unless he ceases to be on the Contractor's payroll. The Engineer reserves the right of investigation to satisfy the Town that the appointed superintendent is properly qualified to carry out the obligations entailed to perform the work herein contemplated in the plans and specifications and directions.

SC-6.02 LABOR; WORKING HOURS

Add the following sentences to the end of paragraph 6.02.B of the General Conditions.

"Regular working hours shall be 7:00 AM to 4:00 PM, Monday through Friday."

"The Official Town of Trumbull Holidays are:

New Year's Day
Martin Luther King Day
Presidents' Day
Good Friday
Memorial Day
Independence Day
Labor Day
Columbus Day
Veteran's Day
Thanksgiving Day
Day Following Thanksgiving Day
Christmas Day
Day After Christmas Day (2014 Floating Holiday)"

SC-6.05 SUBSTITUTES AND "OR-EQUALS"

Add a new paragraph SC-6.05.A.1.c immediately after paragraph 6.05.A.1.b of the General Conditions, which is to read as follows:

- c. It shall be CONTRACTOR's responsibility to coordinate all submittals to ENGINEER for approval to eliminate any conflicts which might arise due to the use of "or equal" items. Any additional costs incidental to the use of "or equal" items shall be paid by CONTRACTOR.

SC-6.06 CONCERNING SUBCONTRACTORS, SUPPLIERS, AND OTHERS

Add the following paragraph immediately after paragraph 6.06.C.2:

3. Owner or Engineer may furnish to any such Subcontractor, Supplier, or other individual or entity, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by a particular Subcontractor, Supplier, or other individual or entity.

Add a new paragraph immediately after Paragraph 6.06.G:

H. The Contractor shall not award work valued at more than fifty (50%) percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-6.09 LAWS AND REGULATIONS

Add new paragraphs immediately after paragraph 6.09.C:

D. All work activities performed, and procurement of goods and services, in association with this Contract must be performed in accordance with all applicable current Federal, State and Local regulations. All work shall also conform to the latest OSHA standards and/or regulations.

E. Each and every provision of law and clause required by law to be inserted in this Contract, shall be deemed to be inserted herein, and the Contract shall be read and enforced as though it were included herein.

SC-6.10 TAXES

Add a new paragraph immediately after Paragraph 6.10.A:

B. The Contractor's attention is called to Regulation 18 as amended, promulgated by the Sales and Use Tax Division of the State Department of Revenue Services, which provided for the exemption of the sales and use tax on the purchase of such materials and supplies as are to be physically incorporated in and become a permanent part of the Project being performed under this Contract. The Contractor may avail himself of the savings of this tax and shall take this exemption into account in calculating his bid for this work. The Contractor or Subcontractor shall furnish his suppliers with a completed Exempt Purchase Certificate. A copy of the Contractor's Exempt Purchase Certificate is included in Article SC-20 of the Supplementary Conditions.

C. The Town of Trumbull is exempt from the payment of taxes imposed by the Federal Government and/or State of Connecticut. Such taxes must not be included in the proposal price. The Town of Trumbull Tax Exempt number is 05-010 31-000.

SC-6.11 USE OF SITE AND OTHER AREAS

Add new paragraphs immediately after Paragraph 6.11A.3:

4. The Contractor shall have no claim against the Town for damages or extra compensation on account of delays in execution of the work or delays in making the construction site available to the Contractor.

5. Equipment can be stored at either the Highway yard at 366 Church Hill and/or Indian Ledge Park Storage located on Whitney Ave at the end of each work day. Prior to storing equipment, Contractor must coordinate with Highway Supervisor to determine the

amount of equipment to be stored. Highway Supervisor will provide final determination as to which yard to store equipment.

SC-6.13 SAFETY AND PROTECTION

Add new paragraphs immediately after Paragraph 6.13.F:

- G. Machinery, equipment and all hazards shall be guarded or eliminated in accordance with the safety provisions of the manual of "Accident Prevention in Construction", latest revision, published by the Associated General Contractors of America, to the extent that such provisions are not in contravention of applicable laws.
- H. If at any time, in the sole judgment of the Engineer, the work is not properly lighted, barricaded, or in any other respect safe in regard to public travel, persons on or about the work, or public or private property, the Engineer shall have the right to order such safeguards to be erected and such precautions to be taken as he deems advisable and the Contractor shall comply promptly with such orders. If, under such circumstances, the Contractor does not or cannot immediately put the work and the safeguards into proper and approved condition, or if the Contractor or his representative is not upon the site so that he can be notified immediately of the insufficiency of safety precautions, the Engineer may put the work into such a condition that it shall be, in his opinion, in all respects safe. The Contractor shall pay all costs and expenses incurred by the Engineer or Owner in doing so. Such action of the Engineer, or his failure to take such action, shall in no way relieve or diminish the responsibility of the Contractor for any and all costs, expenses, losses, liability, claims, suits, proceedings, judgments, awards or damages resulting from, by reason of or in connection with any failure to take safety precautions or the insufficiency of the safety precautions taken by him or the Engineer acting under authority of this article or for failure to comply with the provisions of any State or Federal Occupational Safety and Health Laws, Rules or Regulations.

SC-6.20 INDEMNIFICATION

Add new paragraphs immediately after Paragraph 6.20.C of the General Conditions which are to read as follows:

- D. The Contractor shall indemnify, defend and hold harmless the Owner against any and all mechanic's liens placed on the premises or on Owner's interest in the premises by any Subcontractor of any tier or material supplier. In the event that a Subcontractor of any tier or material supplier places a mechanic's lien on the premises, the Contractor shall, with thirty (30) days of the filing of any mechanic's lien, substitute a bond for such lien or cause the lien to be discharged. If the Contractor shall fail to do so, the Owner may, at its option and at the expense of the Contractor, bond such lien or cause the lien to be discharged, and the Contractor will reimburse the Owner for all costs and expenses incurred, including but not limited to attorneys' fees and court costs.

- E. The Contractor shall indemnify, defend, and hold harmless the Owner from and against any additional costs or expenses incurred by Owner, including attorneys' fees and court costs, as a result of any claim or cause of action by any Subcontractor or supplier of any tier asserted directly against the Owner to recover payment for labor or materials supplied to the Project, unless such claim or cause of action arises from the failure of the Owner to make payments in accordance with the applicable provisions of the Contract Documents.
- F. The Contractor shall indemnify and hold harmless the Owner, its agents and employees from and against any costs and expenses, including attorneys' fees and court costs, incurred in enforcing any of the Contractor's defense, indemnity, and hold harmless obligations under this Contract.

SC-8.11 EVIDENCE OF FINANCIAL ARRANGEMENTS

SC-8.11 Add the following new paragraph immediately after paragraph 8.11.A:

- B. On request of Contractor prior to the execution of any Change Order involving a significant increase in the Contract Price, Owner shall furnish to Contractor reasonable evidence that adequate financial arrangements have been made by Owner to enable Owner to fulfill the increased financial obligations to be undertaken by Owner as a result of such Change Order.

SC-9.03 PROJECT REPRESENTATIVE

Add a new paragraph immediately after paragraph 9.09E of the General Conditions which is to read as follows:

- F. Resident Project Representative is Engineer's agent at the site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding Resident Project Representative's actions. Resident Project Representative's dealings in matters pertaining to the on-site work shall in general be with Engineer and Contractor keeping Owner advised as necessary. Resident Project Representative's dealings with subcontractors shall only be through or with the full knowledge and approval of Contractor. Resident Project Representative shall generally communicate with Owner with the knowledge of and under the direction of Engineer.
 - 1 Duties and Responsibilities of Resident Project Representative:
 - 1.1 Schedules: Review the progress schedule, schedule of Shop Drawing submittals and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.
 - 1.2 Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.
 - 1.3 Liaison:

- a. Serve as Engineer's liaison with Contractor, working principally through Contractor's superintendent and assist in understanding the intent of the Contract Documents; and assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-site operations.
- b. Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.

1.4 Shop Drawings and Samples:

- a. Record date of receipt of Shop Drawings and samples.
- b. Receive samples which are furnished at the site by Contractor, and notify Engineer of availability of samples for examination.
- c. Advise Engineer and Contractor of the commencement of any Work requiring a Shop Drawing or sample if the submittal has not been reviewed by Engineer.

1.5 Review of Work, Rejection of Defective Work, Inspections and Tests:

- a. Conduct on-site observations of the Work in progress to assist Engineer in determining if the Work is in general proceeding in accordance with the Contract Documents.
- b. Report to Engineer whenever Resident Project Representative believes that any Work is unsatisfactory, faulty or defective or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of Work that Resident Project Representative believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
- c. Verify that tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that Contractor maintains adequate records thereof; and observe, record and report to Engineer appropriate details relative to the test procedures and startups.
- d. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to Engineer.

1.6 Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.

1.7 Modifications: Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report with recommendations to Engineer. Transmit to the Contractor decisions as issued by Engineer.

1.8 Records:

- a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all Work Directive Changes, Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, Engineer's clarifications and interpretations of the Contract Documents, progress reports, and other Project related documents.
- b. keep a diary or log book recording Contractor hours on the job site, weather conditions, data relative to questions of Work Directive Changes, Change Orders or changed conditions, list of job site visitors, 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.

- c. Record names, address and telephone numbers of all contractors, subcontractors and major suppliers of materials and equipment.

1.9 Reports:

- a. Furnish 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. Consult with Engineer in advance of scheduled major tests, inspections or start of important phases of the Work.
- c. Draft proposed Change Orders and Work Directive Changes, obtaining backup material from Contractor and recommend to Engineer Change Orders, Work Directive Changes, and Field Orders.
- d. Report immediately to Engineer and Owner upon the occurrence of any accident.

1.10 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.

1.11 Certificates, Maintenance and Operation Manuals: During the course of the Work, verify that certificates, maintenance and operation manuals and other data required to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to Engineer for review and forwarding to Owner prior to final payment for the Work.

1.12 Completion:

- a. Before Engineer issues a Certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.
- b. Conduct final inspection in the company of Engineer, Owner and Contractor and prepare a final list of items to be completed or corrected.
- c. Observe that all items on final list have been completed or corrected and make recommendations to Engineer concerning acceptance.

2 Limitations of Authority of the Resident Project Representative:

- 2.1 Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized by Engineer.
- 2.2 Shall not exceed limitations of Engineer's authority as set forth in the Contract Documents.
- 2.3 Shall not undertake any of the responsibilities of Contractor, subcontractors or Contractor's superintendent.
- 2.4 Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
- 2.5 Shall not advise on, issue directions regarding or assume control over safety precautions and programs in connection with the Work.

- 2.6 Shall not accept Shop Drawing or sample submittals from anyone other than Contractor.
- 2.7 Shall not authorize Owner to occupy the Project in whole or in part.
- 2.8 Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by Engineer.

SC-9.09 LIMITATIONS ON ENGINEER'S AUTHORITY AND RESPONSIBILITIES

Add the following language to the end of Paragraph 9.09.E:

2 Limitations of Authority of the Resident Project Representative:

- 2.1 Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized by Engineer.
- 2.2 Shall not exceed limitations of Engineer's authority as set forth in the Contract Documents.
- 2.3 Shall not undertake any of the responsibilities of Contractor, subcontractors or Contractor's superintendent.
- 2.4 Shall not advise on, issue directions relative to or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
- 2.5 Shall not advise on, issue directions regarding or assume control over safety precautions and programs in connection with the Work.
- 2.6 Shall not accept Shop Drawing or sample submittals from anyone other than Contractor.
- 2.7 Shall not authorize Owner to occupy the Project in whole or in part.
- 2.8 Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by Engineer.

SC-10 CHANGES IN THE WORK; CLAIMS

Add the following paragraph immediately after paragraph 10.01A:

The Town and Contractor may agree to utilize the same unit prices for other additional sewer system rehabilitation work similar to this scope of work and items in the bid. The Contractor and Town may enter into contractual agreement using the prices in this Bid as ON CALL OPPORTUNITIES.

Add the following paragraphs immediately after paragraph 10.03.A.3:

4. Agreement on any Change Order shall constitute a final settlement of all matters relating to the change in the Work that is the subject of the Change Order, including, but not limited to, all direct and indirect costs associated with such change and any and all adjustments to the Contract Price and the Contract Time.

5. Except as expressly permitted hereunder, a change in the Contract Price or the Contract Time shall be accomplished only by a written Change Order executed before the Work is performed. Accordingly, no course of conduct or dealings between the parties, nor express or implied acceptance of alterations or additions to the Work, and no claim that Owner has been unjustly enriched by any alteration of or addition to the Work, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for in the Contract Documents.

SC-11.03 UNIT PRICE WORK

Delete Paragraph 11.03.D in its entirety and insert the following in its place:

D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

- 1.** if the Bid price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
- 2.** if there is no corresponding adjustment with respect to any other item of Work; and
- 3.** if Contractor believes that Contractor has incurred additional expense as a result thereof or if Owner believes that the quantity variation entitles Owner to an adjustment in the unit price, either Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

SC-13.05 OWNER MAY STOP THE WORK

Add a new paragraph immediately after paragraph 13.05.A of the General Conditions to read as follows:

B. If OWNER stops Work under Paragraph 13.05.A, CONTRACTOR shall be entitled to no extension of Contract Time or increase in Contract Price.

SC-14.02 PROGRESS PAYMENTS

Add the following sentence at the end of paragraph 14.02.A.3:

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-14.05 PARTIAL UTILIZATION

Add the following new paragraph immediately after paragraph 14.05.A.4, which is to read as follows:

5. Owner may at any time request Contractor in writing to permit Owner to take over operation of any part of the Work although it is not substantially complete. A copy of such request will be sent to Engineer, and within a reasonable time thereafter Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion and will prepare a list of the items remaining to be completed or corrected thereon before final payment. If Contractor does not object in writing to Owner and Engineer that such part of the Work is not ready for separate operation by Owner, Engineer will finalize the list of items to be completed or corrected and will deliver such lists to Owner and Contractor together with a written recommendation as to the division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, maintenance, utilities, insurance, warranties, and guarantees for that part of the Work which will become binding upon Owner and Contractor at the time when Owner takes over such operation (unless they shall have otherwise agreed in writing and so informed Engineer). During such operation and prior to Substantial Completion of such part of the Work, Owner shall allow Contractor reasonable access to complete or correct items on said list and to complete other related Work.

SC-14.07 FINAL PAYMENT

Add a new paragraph immediately after paragraph 14.07.B.1 of the General Conditions which is to read as follows:

2. Two (2) percent of the total contract amount as reflected on the final Application for Payment shall be retained by Owner during the Correction Period. This retainage shall be held by Owner in an account without interest accruing to Contractor. All amounts otherwise due Contractor will be paid as described in paragraph 14.07.C of the General Conditions. At the end of the correction period, Owner shall pay Contractor the retainage less any amounts deducted for failure of Contractor to perform as outlined in Section 13 of the General Conditions.

SC-15.02 OWNER MAY TERMINATE FOR CAUSE

Add a new phrase immediately after paragraph 15.02.A.4 of the General Conditions which is to read as follows:

5. If CONTRACTOR abandons the Work, or sublets this Contract or any part thereof, without the previous written consent of OWNER, or if the Contract or any claim thereunder shall be assigned by CONTRACTOR otherwise than as herein specified;
6. If the Contractor fails to perform to the Town's satisfaction any material requirement of the Agreement, or is in violation of any specific provision thereof.
7. If the Town reasonably determines satisfactory performance of the Agreement is substantially endangered or can reasonably anticipate such an occurrence or default.

8. If the Contractor furnished any statement, representation, warranty or certification in connection with this Agreement, which is materially false, deceptive, incorrect, or incomplete.

SC-15.05 TOWN RIGHT TO STOP WORK OR TERMINATE CONTRACT

Add the new Section immediately after 15.04.B:

15.05 Town Right to Stop Work of Terminate Contract

- A. If the Contractor shall be adjudged bankrupt, an assignment shall be made for the benefit of creditors. A receiver or liquidator shall be appointed for the Contractor and for any of his property. The Contractor shall be dismissed within twenty (20) days after such appointment. The proceedings in connection therewith shall not be stayed within the said twenty (20) days. If the Contractor shall refuse or fail after notice or warning from the Engineer, to supply enough properly skilled workmen or proper materials, or if the Contractor shall fail to prosecute the work or any part thereof with such diligence as will insure its completion within the period herein specified (or duly authorized extension thereof) or shall fail to complete the work within said period, or if the Contractor shall fail to make prompt payment to persons supplying labor or materials for the work, or if the Contractor shall fail or refuse to regard laws, ordinances or the instructions of the Engineer or otherwise be guilty of a substantial violation of any provision of this contract, then in any such event, the Town without prejudice to any other right or remedy, may give seven (7) days notice to the Contractor, to terminate the employment of the Contractor.
 1. In such cases, the Contractor shall not be entitled to receive any further payment until the work is finished.
 2. If the unpaid balance of the compensation to be paid the Contractor hereunder, shall exceed the expense of so completing the work (including compensation for additional managerial administrative and inspection services and any damages for delay), such excess shall be paid to the Contractor.
 3. If such expense shall exceed such unpaid balance, the Contractor and his sureties shall be liable to the Town for such excess.
 4. If the right of the Contractor to proceed with the work is so terminated, the Town may take possession of and utilize in completing the work, such materials, appliances, supplies, plan and equipment as may be on the site of the work, and necessary therefore.
 5. If the work shall be stopped by order of the Court of any other public authority, for a period of three (3) months, without act or fault of the Contractor or any of his agents, servants, employees, or subcontractors, the Contractor may upon ten (10) days' notice to the Town of Trumbull, discontinue his performance of the work and/or terminate the contract.

SC-16 DISPUTE RESOLUTION

Delete Paragraph 16.01 in its entirety and replace with the following new Paragraph 16.01:

16.01 *Methods and Procedures*

- A. Prior to the initiation of formal dispute resolution proceedings, the claiming party shall submit a written demand for a conference to be attended by those individuals who singly or combined are empowered to make decisions for each entity in an attempt to resolve the disputed issue. Such meeting shall be held within 15 working days of the demand at the offices of the Owner.
- B. Owner and Contractor may mutually request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association or any recognized dispute resolution organization located in the State of Connecticut.
- C. Owner and Contractor shall participate in the mediation process in good faith. The mediation process shall commence within 30 days of the selection of a mediator following the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- D. If the claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless within that time period, Owner or Contractor:
 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or
 2. agrees with the other party to submit the Claim to another dispute resolution process, or
 3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

SC-17 MISCELLANEOUS

Add the following new paragraphs immediately after Section 17.06 Headings, which is to read as follows:

17.07 *Archeological Finds*

- A. Be alert to the possibility that, during prosecution of the Project, significant archeological or paleontological remains or other such materials may be uncovered. When archeological or paleontological materials are uncovered, immediately halt operations in the location of same and notify the Engineer of said discovery. Make every effort to preserve

archeological or paleontological materials intact in their original positions, in order to preserve the archeological or paleontological nature and importance of such materials in relation to one another and to the enclosing soil. The State Historic Preservation Office should also be notified.

B. The Engineer shall have the authority to suspend Project work in the area of such discovery for the purpose of preserving, documenting and recovering the archeological or paleontological materials. Carry out all instructions of the Engineer for the protection of such materials, including steps to protect the site from vandalism and unauthorized investigations, from accidental damage and from dangers such as heavy rainfall or runoff. Reschedule work to minimize any loss of time needed to complete the project while the authorities having jurisdiction evaluates, records and salvages the archeological or paleontological materials.

17.08 Wage Rates

A. The requirements and provisions of all applicable laws and any amendments thereof or additions thereto as to the employment of labor, and to the schedule of minimum wage rates established in compliance with laws shall be a part of these Contract Documents. Copies of the wage schedules are included in SC-32 of these Supplementary Conditions. If, after the Notice of Award, it becomes necessary to employ any person in a trade or occupation not classified in the wage determinations, such person shall be paid at not less than such rates as shall be determined by the officials administrating the laws mentioned above. Such approved minimum rate shall be retroactive to the time of the initial employment of such person in such trade or occupation. CONTRACTOR shall notify OWNER of CONTRACTOR's intention to employ persons in trades or occupations not classified in sufficient time for OWNER to obtain approved rates for such trades or occupations.

B. The schedules of wages referred to above are minimum rates only, and OWNER will not consider any claims for additional compensation made by CONTRACTOR because of payment by CONTRACTOR of any wage rate in excess of the applicable rate contained in these Contract Documents. All disputes in regard to the payment of wages in excess of these specified in the schedules shall be resolved by CONTRACTOR.

C. The said schedules of wages shall continue to be the minimum rates to be paid during the life of this Agreement and a legible copy of said schedules shall be kept posted in a conspicuous place at the site of the work.

D. The State schedule of minimum wage rates are included in SC-32 of these Supplementary Conditions. Where rates differ, the higher rates shall apply as a minimum for that trade.

E. Applicable laws and regulations relating to State of Connecticut Prevailing Wages, employment practices, nondiscrimination, safety and health regulations shall be adhered to by the CONTRACTOR. The CONTRACTOR shall be responsible for "Certified Statements of Compliance" regarding Prevailing Wages. CONTRACTOR shall also collect and submit four (4) Certified "Statements of Compliance" from any sub-contractors.

END OF SECTION

SECTION SC-32WAGE RATES

Wage rates apply to this project. The Wage Rates are attached to these specifications or will be supplied as a separate document, issued as an Addendum. It is the responsibility of the Contractor, before bid opening, to request, if necessary, any additional information on Wage Rates for those trades people who are not covered by the applicable Wage Rates, but who may be employed for the proposed work under this contract.

Additional wage classifications and rates can only be added after bid opening. If required classifications are not listed in the wage determination, the Contractor must list the classifications and the rates he proposes to pay. This list will be forwarded to the Connecticut Department of Labor, Wage & Workplace Standards Division 200 Folly Brook Blvd., Wethersfield, CT 06109 for approval. If DOL rejects any or all of the proposed rates as being too low, the Contractor will be required to pay the higher rate at no increase in the total contract cost. In any event, the rates the Contractor proposes to pay to those unlisted classifications should not be lower than the rate paid to a laborer.

Preferred Employees: In the employment of mechanics, laborers or workmen to perform the work specified herein, preference shall be given to residents of the state who are, and continuously for at least six months prior to the date hereof have been, residents of this state, and if no such person is available then to residents of other states.



SECTION 00810

NOTICE OF AWARD

Date of Issuance:

Owner: Owner's Contract No.:

Engineer: Engineer's Project No.:

Project: Contract Name:

Bidder:

Bidder's Address:

TO BIDDER:

You are notified that Owner has accepted your Bid dated [] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is: \$ []

[] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically. [revise if multiple copies accompany the Notice of Award]

a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner [] counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security [e.g., performance and payment bonds] and insurance documentation as specified in the Instructions to Bidders and General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner:

Authorized Signature

By:

Title:

Copy:

SECTION 00811

NOTICE TO PROCEED

Owner:

Owner's Contract No.:

Contractor:

Contractor's Project No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name:

Effective Date of Contract:

TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [_____], 20_____. [see *Paragraph 4.01 of the General Conditions*]

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, the number of days to achieve Substantial Completion is _____, and the number of days to achieve readiness for final payment is _____].

Before starting any Work at the Site, Contractor must comply with the following:
[Note any access limitations, security procedures, or other restrictions]

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy:

SECTION 00836
CONTRACTOR'S AFFIDAVIT

STATE OF _____

COUNTY OF _____

Before me, the undersigned, a _____

(Notary Public, Justice of Peace, Alderman)

in and for said County and State personally appeared, _____

(Individual, Partner or duly

_____ who being duly sworn according to law

(Authorized Representative of Corporate Contractor)

deposes and says that the cost of all the Work, and outstanding claims and indebtedness of
whatever nature arising out of the performance of the contract between

_____ (Owner)

and _____ of _____

(Contractor)

dated _____ for the construction of the _____

(Agreement Date)

(Project)

_____ and necessary
appurtenant installations have been paid in full.

_____ (Individual, Partner, or duly authorized
representative of corporate contractor)

Sworn to and subscribed before me

This _____ day of _____, 20____

END OF SECTION

SECTION 00837CONTRACTOR'S RELEASE

KNOW ALL MEN BY THESE PRESENTS that _____
 _____ (Contractor)
 of _____, County of _____ and State of _____
 do hereby acknowledge that _____ has this day had, and received of
 _____ (Contractor)
 and from _____ the sum of One Dollar and other valuable considerations in
 _____ (Owner)
 full and complete satisfaction and payment of all sums of money owed, payable and belonging to
 _____ by any means whatsoever, for on account of a Contract
 _____ (Contractor)
 Agreement between _____ and _____ (Contractor)
 dated _____ for _____ (Project)
 (Agreement Date)

NOW, THEREFORE, the said _____
 _____ (Contractor)

(for myself, my heirs, executors and administrators) (for itself, its successors and assigns)
 do/does, by these presents remise, release, quit-claim and forever discharge _____
 _____ (Owner)
 , of and from all claims and demands, arising from or in connection
 with the said contract dated _____, and of and from all, and all manner of action
 _____ (Agreement Date)
 and actions, cause and causes of action and actions, suits, debts, dues, duties, sum and sums of
 money, accounts, reckonings, bonds, bills, specialties, covenants, contracts, agreements,
 promises, variances, damages, judgments, extents, executions, claims and demand, whatsoever in
 law or equity, or otherwise, against _____ its successors and assigns, which (I,
 _____ (Owner)
 my heirs, executors, or administrators) (it, its successors and assigns) ever had, now have or
 which (I, my heirs, executors, or administrators) (it, its successors and assigns) hereafter can,
 shall or may have, for, upon or by reason of any matter, cause, or thing whatsoever; from the
 beginning of recorded time to the date of these presents.

IN WITNESS WHEREOF, _____
(Contractor)

has caused these presents to be duly executed this _____ day of _____ 20_____

Signed, Sealed and Delivered in the presence of:

_____ (seal)
(Individual -Contractor)

_____ (seal)
(Partnership - Contractor)

By _____ (seal)
(Partner)

Attested:

_____ (Corporation)
(Secretary) By _____ (President or Vice President)

(Corp. Seal)

END OF SECTION

SECTION 00838

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

This [preliminary] [final] Certificate of Substantial Completion applies to:

All Work

The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's

responsibilities:

None

As follows

Amendments to

Contractor's responsibilities:

None

As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:

RECEIVED:

RECEIVED:

By:

(Authorized signature)

By:

Owner (Authorized Signature)

By:

Contractor (Authorized Signature)

Title:

Title:

Title:

Date:

Date:

Date:

SECTION 00839WAIVER OF LIEN - MATERIALS AND LABOR

STATE OF _____
 COUNTY OF _____

To: _____ (Owner)

WHEREAS, _____ (the undersigned) have been employed by _____ (Contractor) on the _____ (Project Name) to furnish the following:

_____ (description of material and services).

NOW THEREFORE, the undersigned, for good and valuable considerations do hereby waive and release any and all lien, or right of lien, or claim to lien on said above project and premises under the Law, in relation to Mechanics' Liens Law, on account of labor and materials, or both, furnished by the undersigned to or on account of the said contract for the said project and premises only so far as that portion of work which has been included in our requisition dated _____ and all prior requisitions.

THIS WAIVER AND RELEASE is being made to the undersigned in the amount of \$ _____ which sum the undersigned certifies to be the balance due the undersigned for all labor, materials or both, furnished by the undersigned to or on account of the said contract as included on his requisition dated _____.

GIVEN UNDER our hand and seal, this _____ day of _____, 20 ____.

By: _____

Manufacturer, Supplier or Subcontractor Name

Signature of Authorized Representative

Printed Name and Title

END OF SECTION

SECTION 00841

WORK CHANGE DIRECTIVE

Work Change Directive No.

Date of Issuance: Effective Date:
 Owner: Owner's Contract No.:
 Contractor: Contractor's Project No.:
 Engineer: Engineer's Project No.:
 Project: Contract Name:

Contractor is directed to proceed promptly with the following change(s):

Description:

Attachments: *[List documents supporting change]*

Purpose for Work Change Directive:

Directive to proceed promptly with the Work described herein, prior to agreeing to changes on Contract Price and Contract Time, is issued due to: *[check one or both of the following]*

- Non-agreement on pricing of proposed change.
- Necessity to proceed for schedule or other Project reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price \$ [increase] [decrease].
 Contract Time days [increase] [decrease].

Basis of estimated change in Contract Price:

- Lump Sum Unit Price
- Cost of the Work Other

RECOMMENDED:

AUTHORIZED BY:

RECEIVED:

By:	By:	By:	By:
Engineer (Authorized Signature)		Owner (Authorized Signature)	
Title:	Title:	Title:	
Date:	Date:	Date:	

Approved by Funding Agency (if applicable)

By:	Date:
Title:	

SECTION 00842

CHANGE ORDER

Change Order No. _____

Date of Issuance:	Effective Date:
Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. __ to No. __: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. __ to No. __: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____ Title: _____ Date: _____	By: _____ Title: _____ Date: _____	By: _____ Title: _____ Date: _____
Engineer (if required)	Owner (Authorized Signature)	Contractor (Authorized Signature)

Approved by Funding Agency (if applicable)

By: _____ Date: _____
Title: _____



ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

**Application For Payment
Change Order Summary**

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;

(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all Liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such Liens, security interest, or encumbrances); and

(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor Signature

By: _____ Date: _____

Payment of: \$ _____
(Line 8 or other - attach explanation of the other amount)

is recommended by: _____ (Engineer) _____ (Date)

Payment of: \$ _____
(This amount is the balance of the account.)

is approved by: _____

Approved by: _____ Funding or Financing Entity (if applicable) _____ (Date) _____

Progress Estimate - Lump Sum Work

Contractor's Application

Progress Estimate - Unit Price Work

Contractor's Application

For (Contract):							Application Number:				
Application Period:							Application Date:				
A				B	C	D	E	F			
Item		Contract Information				Estimated Quantity Installed	Value of Work Installed to Date	Materials Presently Stored (not in C)	Total Completed and Stored to Date (D + E)	% (F / B)	Balance to Finish (B - F)
Bid Item No.	Description	Item Quantity	Units	Unit Price	Total Value of Item (\$)						
Totals											

Stored Material Summary

Contractor's Application

For (Contract):					Application Number:			
Application Period:					Application Date:			
A	B	C		D	E	Subtotal Amount	F	
Bid Item No.	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Storage Location	Description of Materials or Equipment Stored		Completed and Stored to Date (D + E)	Incorporated in Work	Materials Remaining in Storage (\$) (D + E - F)
Date Placed into Storage (Month/Year)	Amount (\$)	Amount Stored this Month (\$)	Date (Month/Year)	Amount (\$)				

SECTION 01010SUMMARY OF WORKPART 1 - GENERAL1.1 DESCRIPTION

- A. Location: Work under this contract includes, but is not limited to, locations within the rights-of-way on the streets and easements in the Town of Trumbull, Connecticut, as shown on the drawings.
- B. Work Included:

The Work involves rehabilitation of manholes and pipelines throughout the Town's sewer system including, but not limited to; cleaning and sealing manholes, frame and cover replacement and adjustment; spot lining sections of gravity sewer mains, testing and sealing of pipe joints and laterals, chemical grouting of gravity sewer mains, chemical root control of gravity sewer mains; and pavement and lawn restoration, and appurtenant work
- C. Schedule Limitations:
 1. All construction activities on Town roadways will be as indicated in Section 00800 except during emergencies defined in the General Conditions and unless Owner has specifically granted permission in writing. Work hours on CTDOT roadways shall be dictated by the conditions of the CTDOT encroachment permit.
- D. Related Work Specified Elsewhere:
 1. Construction Schedules: Section 01310.
- E. Removals, Relocations and Rearrangements
 1. Examine the existing site(s) for the work of all trades which will influence the cost of the work under the bid. This work shall include removals, relocations and rearrangements which may interfere with, disturb or complicate the performance of the work under the bid involving systems, equipment and related service lines, which shall continue to be utilized as part of the finished project. The Contractor is responsible for all coordination in this regard.
- F. Coordination:
 1. The Contractor shall be responsible for coordinating work with the Town of Trumbull, Town of Trumbull Water Pollution Control Authority, Trumbull Department of Public Works, Town of Trumbull Police Department, Local Bus Company and all other utilities.
 2. The Contractor shall become familiar with the Town of Trumbull and Connecticut DOT standards for roadway work. He shall retain any necessary permitting required to do work.
 3. The Contractor shall not (except after written consent from the proper parties) enter or occupy with men, tools, materials, or equipment, any land outside the right-of-way or property of the Town. A copy of the written consent shall be given to the Engineer.

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

3.1 CONSTRUCTION SEQUENCE

- A. The Contractor shall submit to the Engineer for review and acceptance, a complete schedule of his proposed sequence of construction operations prior to commencing any work. Refer to Paragraph 1.1.C above for scheduling requirements.
- B. The Contractor shall conduct his operations in such a manner and sequence which shall neither result in a disruption of, nor interfere with, the functional workings of any existing utilities/facilities or wastewater flows.
- C. The Contractor shall furnish, install and operate any piping, equipment and appurtenances necessary to provide the temporary services, facilities, and bypasses required during construction including, but not limited to, bypass pumping, flow barriers and diversions. Temporary facilities, if required, shall have pumping capacity equal to or greater than the existing pumping and/or piping as applicable. The Contractor must submit a temporary by-pass plan to, and receive approval from, the Owner prior to conducting any bypassing.
- D. The Contractor shall include the cost of all temporary facilities required to bypass pump or otherwise handle and maintain flows during rehabilitation work as necessary in the bid price. The cost shall include all labor, tools, equipment and materials necessary. Due to potential high flows within the sewer system during rain events, the contractor shall avoid working in wet weather conditions unless previously discussed with Engineer.
- E. The following items must be reflected in the Contractor's proposed sequence of construction operations:
 1. Access to all residences and businesses must be maintained at all times. To the maximum extent practicable, the Contractor will work to limit the area impacted by his work while on public ways.
- F. The Contractor shall insure that no excavation be left open, unguarded, or water filled during any period of time when work is not actually in progress. It is the purpose and intent that all excavations and backfill, including consolidation operations, and temporary surfacing and pavements within an area be accomplished expeditiously before proceeding to other work areas. Construction scheduling and methods will be discussed at the pre-construction conference.
- G. The Owner reserves the right to schedule the Contractor to construct at any locations within the project area. At the same time the Owner may order the suspension of construction at any location. Construction in seasonally heavily traveled roads shall be avoided, to the greatest extent practical, during the peak traffic periods. The Contractor is advised that various permits are necessary for the progress of the work.
- H. The Contractor shall pay special attention to the schedule and number of construction days as specified. If the Contractor exceeds the number of construction days, he shall pay liquidated damages and incur all additional expenses to include additional costs for uniformed police officer.

I. The Contractor is permitted to have multiple construction crews if required to meet the construction time frame.

3.2 **DETOURS AND ROAD ACCESSIBILITY**

A. The Contractor shall contact the responsible heads of the Fire, Police, Highway and other appropriate governing bodies of the municipality in order to obtain necessary permits and determine the requirements of said departments with respect to traffic control, alternate vehicular access routes, etc. Wherever detours are permitted the size, construction and location of signs shall conform with local and state requirements and/or standards. Detour routes shall be adequately posted to assist the motorist to return to his route of travel. Where the roadway under construction is the only means of vehicular access to a particular area, the Contractor shall provide continual access to the area for residents and emergency vehicles. Contractor shall be responsible to provide detour plan to Town of Trumbull and necessary emergency services for approval.

B. The Contractor is responsible for providing traffic control and/or coordination with the Town of Trumbull Police Department and maintaining two-way traffic during construction. Police Traffic control and protection requirements are listed in Section 01570 shall be the responsibility of the contractor under the respective bid item.

3.3 **CHANGE IN AMOUNT OF WORK**

A. The Owner reserves the right to increase or decrease the amount of any item of the work listed as may be found desirable or necessary during the carrying out of this contract and the unit prices quoted in the Bid Proposal shall apply without change to such variation in the quantity of each of the Items, except as otherwise provided in the Contract Documents. The Owner may elect to reduce or increase the areas where work is scheduled and reduce or increase other related work within the contract.

3.4 **VISIT TO THE SITE**

A. Before submitting a bid, the Contractor shall visit the various sites, examine their conditions and thoroughly acquaint himself with the conditions for performing the work. He shall also study the drawings and compare the same with the information gathered during his examination of the sites, as no extra compensation will be authorized for extra work caused by his unfamiliarity with the sites and/or drawings or the conditions peculiar to this job.

3.5 **DISPOSAL OF EXCESS MATERIAL**

A. All surplus material removed from the excavations shall be disposed of at the cost of the Contractor as an incidental work item.

3.6 **TECHNICAL SPECIFICATIONS**

A. All technical specifications such as ASTM, AWWA, AASHTO, etc, referred to in these specifications refer to the latest revision of such technical specifications.

3.7 **SPECIAL CONDITIONS**

- A. The Contractor is advised that protection of the existing utilities in the vicinity of the project, and the assurance of uninterrupted service during the contract period is of the essence.
- B. In the event that any operations undertaken by the Contractor under this contract result in damages to utilities, all necessary repairs to water piping, valves, hydrants, fittings, cables, sewer mains, etc., shall be done by the Contractor. The Contractor shall provide, at no extra cost to the Owner, all necessary materials, equipment and labor necessary to satisfactorily excavate backfill, repair, etc., in conjunction with such repair work.
- C. Prior to commencing excavation work, the Contractor shall notify Call Before You Dig (1-800-922-4455) to have all existing public and private utility lines and underground structures marked out.

3.8 **PERMITS, FEES AND BONDS**

- A. The Contractor shall obtain and comply with all required permits, pay all fees and provide all bonds and insurances necessary to complete the work as specified. All Town permit fees will be waived.

3.9 **EXISTING UTILITIES AND STRUCTURES**

- A. The plans do not show the location and depth of all utilities, nor do they show all utilities that may be encountered.
- B. The Contractor shall assume that there are existing underground utility connections to each and every building or structure along the line of work, whether they appear on the drawings or not. The Contractor shall notify the proper utility companies and obtain and preserve the locations as marked for all existing gas, electric and other utilities that may be encountered along the line of work, until such time as such markings are no longer required.
- C. The Contractor shall dig by hand in advance of the trenching machinery to determine the exact location and depth of each utility to be encountered. Excavating machinery shall be stopped at least two feet away from each side of the utility to be crossed and the Contractor shall tunnel by hand under these utilities after he has ascertained their exact location and depth.

3.10 **TWENTY-FOUR (24) HOUR EMERGENCY SERVICE**

- A. The Contractor shall maintain a 24-hour, 7-day a week telephone service and a local facility to handle emergency requirements such as settled trenches, rain damage, etc. The Contractor's emergency personnel shall be able to respond to emergency calls within thirty minutes. A list of the personnel and their telephone numbers shall be submitted to the Owner, Town Public Works and Engineering Departments and to the local Police and Fire Departments. This requirement shall apply during the entire length of the project.

- B. This list shall be submitted on the Contractor's letterhead and shall state that should an emergency arise during the implementation of this project, these people are to be contacted. The Contractor shall submit this letter at the Pre-Construction Conference.

END OF SECTION

SECTION 01050COORDINATIONPART 1 - GENERAL1.1 DESCRIPTION

- A. Contractor is required to work in close proximity to Owner's existing facilities. The Contractor, under this Contract, will be responsible for coordinating construction activities with Owner to ensure that services, facilities, and safe working conditions are maintained.
- B. Any damage to existing structures, equipment and property, accepted equipment or structures, and property or work in progress by others; as a result of the Contractor's or his subcontractor's operations shall be made good by the Contractor at no additional cost to the Owner.

1.2 COORDINATION WITH OTHERS

- A. PRIOR TO ANY CONSTRUCTION ACTIVITY: the Contractor shall call the statewide utility clearing center "CALL-BEFORE-YOU-DIG" at 1-800-922-4455. All existing utilities shall be marked in the field by the respective utility companies prior to any construction activities.
- B. Town of Trumbull, CT:
 - 1. Contractor shall coordinate access, egress, detours and traffic control, if required, at each site with the Town of Trumbull Police Department and CT State Police. The Contractor shall notify the Town of Trumbull Police, CT State Police, Fire Department and local school bus company at least twenty-four (24) hours in advance of any street closings or detours. All main roads shall have police patrol. Police patrols shall be scheduled through the Engineering department at least forty-eight (48) hours in advance of any activities occurring on main roads.
 - 2. Contractor shall coordinate all work on Town property with the Engineering department personnel.
 - 3. The Contractor shall be responsible for coordinating and maintaining public services to all public and private properties.
 - 4. The Contractor shall be responsible for notifying the Town prior to any work occurring in easements throughout the project. This includes inspection work as well as other construction related activities occurring in the easements so that the Town and Engineer can coordinate with the homeowners. The Contractor shall notify the Town no less than fourteen (14) days of advance of any activities occurring the easements so that the Town and Engineer can coordinate with the homeowners.
- C. The Contractor shall identify all utility companies who have facilities in the project vicinity and coordinate the Work of this Contract with said utility companies.
- D. The following is list of utilities/agencies that may be involved in this project:
 - 1. The Aquarian Water Company of CT 203.362.3061
 - 2. United Illuminating Company 203.447.7900

3. Southern CT Gas Company	1.866.268.2887
4. Trumbull WPCA/Sewer Department	203.452.5048
5. Trumbull Department of Public Works	203.452.5045
6. Trumbull Town Engineer	203.452.5053

The Contractor shall coordinate the Work of this Contract with the above utilities/agencies and with any and all others who become involved in the project, to provide a minimum disruption to utility services and to services regulated by said agencies. The Contractor shall provide not less than forty-eight (48) hours notice to utilities prior to working in proximity of utilities or in areas under control of said agencies. The Contractor shall bear all costs for the utility company's inspection requirements

- E. The Contractor shall provide the Resident Project Representative and Owner a construction schedule indicating the times to perform the work required. The Contractor shall update the schedule when required and give the Resident Project Representative and Owner one week notice before the start of any work. The Contractor shall daily communicate with the Resident Project Representative and Owner concerning updating the schedule, job progress, delay or early starts, etc.
- F. Project meetings shall occur as specified in Section 01200 "Project Meetings" of these Specifications.

END OF SECTION

SECTION 01070ABBREVIATIONS & SYMBOLSPART 1 - GENERAL1.1 DESCRIPTION

A. Where any of the following abbreviations are used in these Specifications, they shall have the meaning set forth opposite each.

AASHTO	American Association of State Highway and Transportation Officials
AC	Alternating Current
ACI	American Concrete Institute
ACP	Asbestos Cement Pipe
AGA	American Gas Association
AIC	Ampere Interrupting Capacity
AGMA	American Gear Manufacturers Association
AIEE(IEEE)	American Institute of Electrical Engineers (Institute of Electrical and Electronics Engineers, Inc.)
AISC	American Institute of Steel Construction
amp	Ampere 125-16
Amer. Std.	American Standard for Cast Iron Pipe Flanges and Flanged Fittings, Class 125 (ASA B16.11960)
ANSI	American National Standards Institute
API	American Petroleum Institute
ASA	American Standards Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWG	American or Brown and Sharpe Wire Gage
AWWA	American Water Works Association
BOD	Biochemical Oxygen Demand
c.f.	Cubic Foot
c.f.m.	Cubic Foot Per Minute
c.f.s.	Cubic Foot Per Second
CI	Cast Iron
CIPRA	Cast Iron Pipe Research Association
CSI	Construction Specifications Institute
c.y.	Cubic Yards
DC	Direct Current
DEP	Department of Environmental Protection
DI	Ductile Iron
DOT	Department of Transportation
EDR	Equivalent Directional Radiation

EPA	U.S. Environmental Protection Agency
fps	Feet Per Second
ft.	Feet
gal.	Gallons
gpd	Gallons Per Day
gpm	Gallons Per Minute
HP	Horsepower
IBR	Institute of Boiler and Radiator Manufacturers
in.	Inches
inter.	Interlock
ISA	Instrument Society of America
kva	Kilovolt-ampere
kw	Kilowatt
lb.	Pound
max.	Maximum
MCB	Master Car Builders
MGD	Million Gallons Per Day
Min.	Minimum
NBS	National Bureau of Standards
NEC	National Electrical Code, Latest Edition
NEMA	National Electrical Manufacturers Association
NEWWA	New England Water Works Association
NPT	National Pipe Thread
OS&Y	Outside Screw and Yoke
PCA	Portland Cement Association
ppm	Parts Per Million
%	Percent
psi	Pounds Per Square Inch
psig	Pounds Per Square Inch Gage
PVC	Polyvinyl Chloride
rpm	Revolutions Per Minute
RUS	Rural Utility Service
s.f.	Square Foot
STL. W.G.	U.S. Steel Wire, Washburn and Moen, American Steel and Wire Cos., or Roebling Gage
s.y.	Square yard
TDH	Total Dynamic Head
USAS	Standards of the United States of America Standards Institute (formerly American Standards Association)
USS GAGE	United States Standard Gage
VC	Vitrified Clay
WSP	Working Steam Pressure
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Service Administration, Washington, D.C.

END OF SECTION

SECTION 01150
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. For lump sum items, payment shall be made to the contractor in accordance with an accepted progress schedule and schedule of values on the basis of actual work completed.
- B. For unit-price items, payment shall be based on the actual amount of work accepted and for the actual amount of materials in place, as shown by final measurements.
 1. All units of measurement shall be standard United States convention as applied to the specific items of work by tradition and as interpreted by the Engineer.
 2. At the end of each day's work, the Contractor's Superintendent or other authorized representative of the Contractor shall meet with the Resident Project Representative and determine the quantities of unit price work accomplished and/or completed during the work day.
 3. The Resident Project Representative will then prepare two "Daily Progress Reports" which shall be signed by both the Resident Project Representative and Contractor's Representative.
 4. Once each month the Resident Project Representative will prepare two "Monthly Progress Summation" forms from the month's accumulation of "Daily Progress Reports" which shall also be signed by both the Resident Project Representative and Contractor's Representative.
 5. These completed forms will provide the basis of the Engineer's monthly quantity estimate upon which payment will be made. Items not appearing on both the Daily Progress Reports and Monthly Progress Summation will not be included for payment. Items appearing on forms not properly signed by the Contractor will not be included for payment.
 6. After the work is completed and before final payment is made, the Engineer will make final measurements to determine the quantities of various items of work accepted as the basis for final settlement.

1.2 SCOPE OF PAYMENT

- A. Payments to the Contractor will be made for the actual quantities of the Contract items performed and accepted in accordance with the Contract Documents. Upon completion of construction, if these actual quantities show either an increase or decrease from the quantities given in the Proposal Form, the Contract Unit Prices will still prevail.
- B. The Contractor shall accept in compensation, as herein provided, in full payment for furnishing all materials, labor, tools, equipment, and incidentals necessary to the completed work and for performing all work contemplated and embraced by the Contract; also for all loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered

during the prosecution of the Work and until its final acceptance by the Engineer, and for all risks of every description connected with the prosecution of the work, except as provided herein, also for all expenses incurred in consequence of the suspension of the Work as herein authorized.

C. The payment of any partial estimate or of any retained percentage except by and under the approved final invoice, in no way shall affect the obligation of the Contractor to repair or renew any defective parts of the construction or to be responsible for all damage due to such defects.

1.3 **PAYMENT FOR INCREASED OR DECREASED QUANTITIES**

A. When alterations in the quantities of work not requiring supplemental agreements, as hereinbefore provided for, are ordered and performed, the Contractor shall accept payment in full at the Contract price for the actual quantities of work done. No allowance will be made for anticipated profits. Increased or decreased work involving supplemental agreements will be paid for as stipulated in such agreements.

1.4 **OMITTED ITEMS**

A. Should any items contained in the bid form be found unnecessary for the proper completion of the work contracted, the Engineer may eliminate such items from the Contract, and such action shall in no way invalidate the Contract, and no allowance will be made for items so eliminated in making final payment to the Contractor.

1.5 **PARTIAL PAYMENTS**

A. Partial payments shall be made monthly as the work progresses. Partial payments shall be made subject to the provisions of the Supplemental and General Conditions. The breakdown of quantities will be determined by the Engineer.

1.6 **PAYMENT FOR MATERIAL DELIVERED**

A. When requested by the Contractor and at the discretion of the Owner, payment may be made for all or part of the value of acceptable, non-perishable materials and equipment which are to be incorporated into bid items, have not been used and have been delivered to the construction site, or placed in storage places acceptable to the Owner. Payment shall be subject to the provisions of the General and Supplemental Conditions.

B. No payment shall be made upon fuels, supplies, lumber, false work, or other materials, or on temporary structures or other work of any kind which are not a permanent part of the Contract.

1.7 **FINAL PAYMENT**

A. The Engineer will make, as soon as practicable after the entire completion of the project, a final quantity invoice of the amount of the Work performed and the value of such Work. Owner shall make final payments of the sum found due less retainages subject to provisions of the General and Supplemental Conditions.

1.8 **INCIDENTAL WORK**

A. Incidental work items for which separate payment will not be made includes, but is not limited to, the following items:

1. Contract administration and insurances
2. Pre-Construction photographs, videos, and manhole inspections.
3. Safety and health plan
4. Clearing, grubbing and stripping
5. Project Record Documents
6. Traffic control plan and traffic regulation.
7. Signs
8. Clean-up and restoration of property.
9. Restoration of property, and replacement of fences, curbs, structures and other minor items disturbed by the construction activities
10. Cooperation and coordination with other Contractors and utility companies including related inspection costs and other costs (Refer to Section 01050).
11. Temporary utility services to buildings, as required to maintain service during construction.
12. Minor Items--such as relocation of sign posts, guard rails, rock wall, mail boxes, curbs, traffic loop detectors, pavement markings, etc., damaged as a result of construction activities.
13. Maintenance of all existing sewer flows and repair of existing sewer pipes.
14. Dewatering as necessary.
15. Dust control.
16. Erosion control.
17. Noise Control
18. Quality assurance testing.
19. Final cleaning of sewers, force mains and storm drains.
20. Clearing, grubbing and stripping.
21. Loam, seeding, grading, liming, fertilization, mulching, and watering.
22. Routine flagman services.
23. Construction schedules, bonds, insurance, shop drawings, warranties, guarantees, certifications and other submittals required by the Contract Documents.
24. Materials testing
25. Repair and replacement of water lines (all sizes), culverts, underdrains, rock lined drainage trenches in streets and other utilities damaged by construction activities and corresponding proper disposal of removed materials unless otherwise paid for.
26. Temporary utilities for construction and to maintain existing service during construction
27. Temporary construction necessary for construction sequencing and other facilities not permanently incorporated into the work.
28. Weather protection
29. Permits not otherwise paid for or provided by the Owner.
30. Visits to the project site or elsewhere by personnel or agents of the Contractor, including manufacturer's representatives, as may be required.
31. On-site and other facilities acceptable to Engineer for the storage of materials, supplies and equipment to be incorporated into the Work

32. Test pits to determine existing utility locations, soils conditions, and as required to complete the project
33. Pavement markings.
34. Earthwork (except ledge)
35. Locating and verifying the locations of water and sewer services within the limits of work. Capping or plugging existing underground utilities as shown on the plans and Dye testing as required to determine bulkheading and reconnection requirements.
36. Removal and subsequent delivery of replaced or obsolete frames and covers to a location within the City limits designated by the Owner.
37. Post Completion CCTV and report of Entire Sanitary Sewer System rehabilitated under this Contract.
38. Miscellaneous demolition required by the construction

1.9 **DESCRIPTION OF PAY ITEMS**

- A. The following sections describe the measurement of and payment for the work to be done under the respective items listed in the Bid Form.
- B. Each unit or lump-sum price stated in the Bid Form shall constitute full compensation, as herein specified, for each item of the work completed.

Item No.1 Mobilization/Demobilization Method of Measurement: Lump sum. Total of bid item shall not exceed 5% of Total Amount of the Bid.

- B. Basis of Payment: Mobilization/demobilization costs are those costs of initiating and ending the contract. Payment for mobilization/demobilization shall be a lump sum at the price as stated in the Bid Form. Seventy-Five percent (75%) of the lump sum will be payable when the Contractor is operational on the site and the remaining 25% of the lump sum will be payable when the Contractor leaves the site following the completion of all contract work. For purposes of payment on this item, "Operational" shall mean the Contractor has provided all required and properly executed bonds and insurance certificates and the owner has approved the following: Construction Schedule, Traffic Control Plan, and Pre-Construction photographs/videos. "Operational" shall also mean Contractor has performed the pre-construction television sewer inspection and pre-rehabilitation manhole inspections, delivered the records of it to the Engineer and the Engineer has acknowledged the records are accurate and of use. Only one lump sum payment divided into the two partial payments described herein shall be made to cover all mobilization/demobilization costs throughout the entire contract.

Item No. 2 - Replace Manhole Frame and Cover

- A. Method of Measurement: Replace Manhole Frame and Cover sets accepted for payment shall be for the actual number of manhole frame and cover sets replaced as indicated in the Contract Documents or as directed by the Engineer.
- B. Basis of Payment: The unit price per each Replace Manhole Frame and Cover set replaced shall be full compensation for all labor, materials and equipment necessary to complete the work including circular sawcut of frame and cover; removal and disposal of roadway pavement to the limits required, removal and disposal of existing cover and frame; cleaning, resetting or otherwise modifying the manhole

chimney to provide for a proper mounting surface for the frame; replacing chimney where indicated in the Contract Documents; disposal of removed chimney materials; furnishing, installing and grouting new frame and non-vented cover; backfill including aggregate base and subbase material; installation of roadway pavement; compaction; cleaning manhole; site restoration; adjustment of frame and cover to final grade; and all else incidental thereto for which payment is not provided under other items.

Item No. 3 - Seal Manhole

- A. Method of Measurement: Seal Manhole accepted for payment shall be for the actual number of manholes whose leaks are sealed with injection grouting, at the locations indicated in the Contract Documents or as directed by the Engineer.
- B. Basis of Payment: The unit price per each Seal Manhole shall be full compensation for all labor, materials and equipment necessary to complete the work including power wash cleaning and preparation of structure; disposal of materials removed; drilling holes for injection grouting; injection of grout to seal leaks; patching grout holes; grouting and sealing around leaking pipe connections or other defects; maintaining and bypassing existing sewer flows; and all else incidental thereto for which payment is not provided under other items. Payment shall not be made until visual inspection and acceptance by the Engineer.

Item No. 4 - Line Manhole Chimney

- A. Method of Measurement: Line Manhole Chimney accepted for payment shall be for the actual number of manholes whose chimney is lined with cementitious lining as indicated in the Contract Documents or as directed by the Engineer.
- B. Basis of Payment:
 1. The unit price per each Line Manhole Chimney lined shall be full compensation for all labor, materials and equipment necessary to complete the work including cleaning and preparation of structure for lining; patching holes; lining of chimney; testing; and all else incidental thereto for which payment is not provided under other items. Payment shall not be made until visual inspection and acceptance by the Engineer.
 2. Chemical grout injection for leak sealing and the patching of holes created for the injection grouting shall be paid for under the bid item for that work.

Item No. 5 – Test and Seal Pipe Joints

- A. Method of Measurement: Test and Seal Pipe Joints accepted for payment shall be the actual number of existing pipe joints tested, sealed and accepted as complete.
- B. Basis of Payment:
 1. Test and Seal Pipe Joints shall be paid for at the Contract unit price per joint stated in the Bid Schedule. Said unit price shall include compensation for furnishing all labor, materials, tools, and equipment necessary for pipe joint testing and sealing, complete, satisfactorily tested, and operational. Work under this item shall include sewer line cleaning, disposal of material removed from the sewer, TV inspection of the sewer, video DVDs and written logs, testing of each joint, chemical injection sealing of joints failing the initial test, re-testing

and re-grouting of all joints according to the specification, maintaining and bypassing existing sewer flows and sewer service to all users, final cleaning of access manholes, notices to abutters, and all appurtenant work as needed to complete the work.

2. Joints tested and accepted without requiring chemical joint sealing shall also be paid for under this item.

Item No. 6 – Test and Seal Pipe Joints - Lateral

- A. Method of Measurement: Test and Seal Pipe Joints – Lateral accepted for payment shall be the actual number of laterals tested, sealed and accepted as complete.
- B. Basis of Payment:
 1. Test and Seal Pipe Joints – Lateral shall be paid for at the Contract unit price per lateral as stated in the Bid Schedule. Said unit price shall include compensation for furnishing all labor, materials, tools, and equipment necessary for building lateral pipe joint testing and sealing, complete, satisfactorily tested, and operational. Work under this item shall include sewer line cleaning, disposal of material removed from the sewer, TV inspection of the lateral, video DVDs and written logs, testing of each joint, chemical injection sealing of joints failing the initial test, re-testing and re-grouting of all joints according to the specification, maintaining and bypassing existing sewer flows and sewer service to all users, final cleaning of access manholes, notices to abutters, and all appurtenant work as needed to complete the work. It is assumed that each building lateral designated for testing and sealing shall be tested and sealed from the main to approximately five (5) feet up the lateral. This includes testing and sealing the lateral connection point to the main.
 2. Joints tested and accepted without requiring chemical joint sealing shall also be paid for under this item.

Item Nos. 7, and 8 - Spot Lining (various sizes)

- A. Method of Measurement: Spot Lining of sewer pipe accepted for payment shall be the actual number of sections of sewer pipe lined as noted in the Contract Documents and accepted as complete.
- B. Basis of Payment: The Spot Lining repairs shall be paid for at the Contract unit price per each stated in the Bid Schedule, at length no less than 4 feet, and not to exceed 13 feet. Spot liner length shall also not be less than an appropriate amount to cover the repair with a minimum of 1 foot of liner either side of any visible defect. Said unit price shall include compensation for furnishing all labor, materials, tools, and equipment necessary for the work, complete, satisfactorily inspected, and operational. Work under this item shall also include sewer line cleaning, disposal of material removed from the sewer, pre installation TV inspection, reinstatement of the services, including cutting of the liner at each service if services are present in the liner extents, polishing the cut hole, grout and seal of each service connection, sealing the ends of the liner sections, curing, post installation TV inspection of the sewer, video DVDs and written logs, maintaining and bypassing existing sewer flows and sewer service to all users, final cleaning of access manholes, notices to abutters, and all else incidental thereto for which payment is not provided under

other items.

Item No. 9– Chemical Root Control (all pipe sizes)

- A. Method of Measurement: Chemical Root Control of sewer pipe accepted for payment shall be the actual distance in linear feet measured along the pipe from pipe connection point to pipe connection point chemically treated and accepted as complete.
- B. Basis of Payment: The chemical root control shall be paid for at the Contract unit price per linear foot stated in the Bid Schedule. Said unit price shall include compensation for furnishing all labor, materials, tools, and equipment necessary for chemical root control. Work under this item shall also include compliance with all local, state and federal regulations, protection of existing facilities from damage, providing water, disposal of material removed from the sewer, maintaining sewer flows and sewer service to all users, notices to abutters, and all appurtenant work as needed to complete the work. Root removal is included in this item and these pipes are not eligible for additional heavy cleaning costs.

Item No. 10 – Heavy Cleaning of Pipes (various sizes)

- A. Method of Measurement: For Heavy Cleaning of Pipes, in order to test and seal or line, accepted for payment shall be the additional cost per linear feet of pipe cleaned after 3 initial passes of the high pressure water jetting equipment as outlined in Section 02752, additional cost per linear feet of root cutting and/or additional cost of linear feet of grease removal, and accepted as complete.
- B. Basis of Payment: Heavy Cleaning of Pipes shall be paid for at the Contract unit price per linear foot as stated in the Bid Schedule. Contractor doing the heavy cleaning is also responsible for removal of debris accumulated as a result of the cleaning work; grit and debris cannot be pushed downstream into the system. Amount of material to be removed from the line must, in the opinion of the engineer, significantly differ from what was shown in provided CCTV footage to qualify for payment. Work includes all transportation and disposal of all collected materials to the White Plains Road Pump Station (Beardsley Pump Station) and/or DPW site and Contractor shall coordinate with the WPCA Staff accordingly.

Item No. 11 - Uniformed Police Officer Allowance

- A. Method of Measurement: A work allowance is included for municipal or State uniformed police officers for traffic control. The use of a municipal or State uniformed police officer will be used and paid for under this item at the direction of the Owner or Engineer only. Contractor shall be responsible to maintain traffic control at all times as part of incidental work items.
- B. Basis of Payment:
 1. The allowance shall cover the cost charged to the Contractor by the Trumbull Police Department or CT State Police for providing Uniformed Police Officers for traffic control under the direction of the Owner or Engineer. Excluded from this allowance are any costs associated with routine traffic control, including signage, cones, flashing lights, etc. or certified flaggers where the Town or State does not specifically require the use of Uniformed Police Officers. Police patrol

shall be scheduled through the Engineering Department. See 01050 Coordination.

2. Payment for this item shall be on the basis of invoices presented by the Police Department to the Contractor for the work. No mark-up will be added by the Contractor to the invoice.

Item No. 12 - Traffic Control

- A. Method of Measurement: Traffic Control will be paid for at the Lump Sum price as stated in the Bid Schedule.
- B. Basis of Payment: Payment for Traffic Control shall constitute full compensation for all traffic regulation and control efforts and including all labor, materials, equipment and supervision required to provide comprehensive and professional traffic regulation and control at all project locations. The traffic control plan, signs, warning lights, barricades, and other means of traffic control as required per MUTCD, temporary pavement markings for traffic re-routing, pedestrian safety, and coordination with the Town and Police Department are included in this item. Payment under this item will be made for full-time dedicated flaggers only. Part-time flaggers will not be considered adequate. The lump sum shall be paid in partial payments over the course of the project, where the percentage paid is equal to the percentage of completion of the entire Contract.

END OF SECTION

SECTION 01200
PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.
- B. Related work described elsewhere: The Contractor's relations with his subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and are not part of project meetings content.

1.2 QUALITY ASSURANCE

- A. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS

- A. Agenda items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.
- B. Minutes: The Engineer will compile minutes of each project meeting and will furnish a copy to the Contractor. The Contractor may make and distribute such other copies as he wishes.

PART 2 - PRODUCTS

(No products are required in this Section.)

PART 3 - EXECUTION

3.1 MEETING SCHEDULE

- A. Except as noted below for Preconstruction Meeting, project meetings will be held monthly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

- A. To the maximum extent practicable, meetings will be held at the job site in the Engineer's field office.

3.3 PRECONSTRUCTION MEETING

- A. Preconstruction meeting will be scheduled within twenty days after the Effective Date of the Agreement, but before the Contractor starts work at the site. Provide attendance by authorized representatives of the Contractor and all major subcontractors. The Engineer will advise other interested parties and request their attendance.

B. Minimum agenda: Distribute data on, and discuss:

1. Identification of key project personnel for Owner, Engineer, Contractor, funding/regulatory Agencies.
2. Responsibilities of Owner, Engineer, Resident Project Representative, Contractor.
3. Channels and procedures for communications.
4. Construction schedule, including sequence of critical work.
5. Easements, permits.
6. Contract Documents, including distribution of required copies of original documents and revisions.
7. Processing of Shop Drawings and other data submitted to the Engineer for review.
8. Processing of field decisions and Change Orders.
9. Rules and regulations governing performance of the Work, including funding/regulatory Agency requirements.
10. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters.

3.4 **PROJECT MEETINGS**

A. Attendance: To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The Superintendent shall attend. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved.

B. Minimum agenda:

1. Review, revise as necessary, and approved minutes of previous meeting.
2. Review progress of the Work since last meeting, including status of submittals for approval.
3. Review schedule of work to be accomplished prior to next meeting.
4. Discuss monthly partial payment request.
5. Review status of change order requests and Work Directive Changes.
6. Identify problems which impede planned progress.
7. Develop corrective measures and procedures to regain planned schedule.
8. Complete other current business.

END OF SECTION

SECTION 01310
CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: Within ten (10) days after the effective date of the Agreement between Owner and Contractor submit to the Engineer an estimated progress schedule as specified herein.
- B. Form of Schedules:
 - 1. Narrative: Completely describe the construction methods to be employed.
 - 2. Network Analysis System:
 - a. Provide a separate horizontal schedule line for each trade or operation and show concurrent and preceding activities.
 - b. Present in chronological order the beginning of each trade or operation showing duration and float time.
 - c. Scale: Identify key dates and allow space for updating and revision.
 - 3. Mathematical Analysis:
 - a. A mathematical analysis shall accompany the network diagram. A computer printout will be acceptable.
 - b. Information shall be included on activity numbers, duration, early start, late start, etc. and float times.
- C. Content of Schedules:
 - 1. Provide complete sequence of construction by activity:
 - a. Shop Drawings, Project Data and Samples:
 - i. Submittal dates.
 - ii. Dates reviewed copies will be required.
 - b. Decision dates for:
 - i. Products specified by allowances.
 - ii. Selection of finishes.
 - c. Estimated product procurement and delivery dates.
 - d. Dates for beginning and completion of each element of construction.
 - 2. Identify work of separate phases and logically grouped activities.
 - 3. Show the projected percentage of completion for each item of work as of the first day of each month.
 - 4. Provide separate sub-schedules, if requested by the Engineer, showing submittals, review times, procurement schedules, and delivery dates.
- D. Updating:
 - 1. Show all changes occurring since previous submission.
 - 2. Indicate progress of each activity, show completion dates.
 - 3. Include:
 - a. Major changes in scope.
 - b. Activities modified since previous updating.
 - c. Revised projections due to changes.
 - d. Other identifiable changes.

4. Provide narrative report, including:
 - a. Discussion of problem areas, including current and anticipated delay factors.
 - b. Corrective action taken, or proposed.
 - c. Description of revisions that may affect schedules.
5. The Contractor's normal sequence of operation in performing the work under the terms of this contract shall be varied at the direction of the Town of Trumbull, so that priorities can be given in critical areas such as schedule, right-of-way, clearance and other Town commitments, either present or future.

1.2 **SUBMITTALS**

- A. Submit updated schedules with each progress payment request.
- B. Submit 4 copies of initial and updated schedules to the Engineer.
- C. The Contractor shall file an appeal to the Public Works if the sequence of operation in performing the work is varied by the Town in a manner that is unacceptable to him.

END OF SECTION

SECTION 01320
SAFETY AND HEALTH PLAN

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the work, as outlined herein and in the General and Special Conditions of the Contract Documents. Within 10 days after the effective date of the Agreement between Owner and Contractor, submit to the Engineer a Safety and Health Plan as specified herein. Refer to submittals section below.
2. Contractor shall comply with all applicable Laws and Regulations related to the safety of persons or property, or for the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
3. Contractor shall designate a qualified and experienced safety representative (OSHA defined "Competent Person") at the site whose duties and responsibilities shall be the prevention of accidents and maintaining and supervising of safety precautions and programs, including a "Job Hazards Analysis".
4. The Contractor shall be solely responsible to provide all labor, equipment, and utilities sufficient to ensure no construction noise, particulates, or odors, are allowed to accumulate to levels which adversely affect health or work in, or near the construction area. The Contractor will be required to limit noise operations pursuant to the Town of Trumbull Charter Chapter 164-1 to and including Chapter 164-13.

B. Content of Safety and Health Plan:

1. Prepare complete safety and health plan in accordance with the requirements of CFR Title 29 Part 1926 - Safety and Health Regulations for Construction.
 - a. Provide documentation that Contractor's hazardous communication program is up to date.
 - b. Provide documentation that Contractor's safety training is up to date.
 - c. Prepare a project specific Safety and Health Plan addressing construction safety issues, including but not limited to excavations, fall protection and egress, as well as provisions for construction in hazardous environmental conditions at the wastewater treatment facility. The hazardous environmental conditions at the wastewater treatment facility include, but are not limited to, confined space entry, electrically-classified spaces, and chemical storage and handling areas, to name a few.
2. Safety provisions for confined space entry shall follow General Industry Standard CFR Title 29 Part 1910.146 and will be incorporated into the Safety and Health Plan.

C. Updating:

1. Contractor shall be responsible for updating the Safety and Health Plan as appropriate throughout the course of the construction period.

1.2 **SUBMITTALS**

- A. Contractor shall be responsible for all aspects of construction site safety. Provide 3 copies of the Contractor's site specific Safety and Health Plan to the Engineer. The Safety and Health Plan is provided "for information only" to inform the Owner, Engineer and Resident Project Representative of the project specific safety program requirements. The Contractor will overview the plan with the Owner (and staff), Engineer (and Resident Project Representative) at the beginning of the project, and subsequently when/if the safety plan is updated.
- B. Provide updated Safety and Health Plans as necessary during the course of the project.
- C. Contractor's most current Safety and Health Plan shall be available at the construction site throughout the construction project.

1.3 **ON-SITE COORDINATION MEETINGS**

- A. Contractor shall review key aspects of Safety and Health Plan at the Pre-Construction Meeting, and subsequent on-site safety informational meeting.
- B. Contractor shall report to Engineer and Owner at each progress meeting concerning compliance with the Safety and Health Plan for the most recent construction period and new considerations and requirements for the upcoming period.
- C. Contractor shall hold weekly on-site coordination meetings with Resident Project Representative and Owner to ensure that Owner's staff is aware of key Safety and Health Plan requirements of the current phase of construction.

1.4 **OWNER'S CONFINED SPACE ENTRY PROGRAM INFORMATION**

- A. A copy of the Owner's Confined Space Entry Program is available for viewing at the facility and is not included herein.

END OF SECTION

SECTION 01340SUBMITTALSPART 1 - GENERAL**1.1 DESCRIPTION**

- A. Work Included:
 - 1. Submit all shop drawings, operations and maintenance manuals, Manufacturers' certificates, project data, and samples required by the Specifications.
- B. Related Work Specified Elsewhere:
 - 1. Construction Schedules: Section 01310
 - 2. Project Record Documents: Section 01720
 - 3. General Conditions: Section 00700.
- C. Submittals: This project shall utilize:
 - 1. Submittals – Electronic via Email/FTP with Hard Copy for Record
 - a. The Contractor shall submit to the Engineer an electronic submittal of shop drawings and O&M Manuals in portable document format (PDF) transmitted via email or file transfer protocol (FTP). The Engineer shall return an electronic PDF of the submittal review comments to the Contractor for distribution to subcontractors, suppliers and manufacturers. The electronic submittals shall serve as the electronic record of the project.
 - b. In addition, completed shop drawings and completed operations and maintenance (O&M) manuals shall be provided in hard copy (paper) format, for the record, in accordance with the following requirements.
 - i. Shop drawings and O&M manuals shall be considered "completed" once an action code of "0" or "1" has been attained, as specified below, unless otherwise directed by the Engineer.
 - ii. Once completed, the Contractor shall provide three hard copy sets (for Owner, Engineer and Resident Project Representative, respectively).
 - iii. Hard copy submittals shall be updated on a monthly basis, for those submittals completed during the preceding month.

1.2 SHOP DRAWINGS

- A. Shop Drawings are required for each and every element of the work.
- B. Shop Drawings are generally defined as all fabrication and erection drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the Contractor, his subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.
- C. The Contractor shall provide a completed Contractor Submittal Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of every shop drawing and signed by the Contractor and Manufacturer (where applicable). Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer

or fabricator as correct for the work.

- D. Shop Drawings shall be submitted as a complete package by specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials and samples associated with each specification section be included as a single submittal for the Engineer's review. Any deviation from this requirement, such as submitting miscellaneous metals grouped by structure, shall be requested in writing with an anticipated shop drawing breakdown/schedule prior to any associated submittal.
- E. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.
- F. No material or equipment shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the Work shall then be as shown in and represented by said drawings.
- G. Until the necessary review has been made, the Contractor shall not proceed with any portion of the work (such as the construction of foundations), the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.
- H. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. Shop drawings shall be formatted to standard paper sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 24 inches by 36 inches; (b) 11 inches by 17 inches, and (c) 11 inches by 8-1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein may be returned for resubmittal without being reviewed.
- I. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer.
- J. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in the transmittal. Shop Drawings that contain significant deviations that are not brought to the attention of the Engineer may be subject to rejection.
- K. Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, he shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications.
- L. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions

which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such review and checking, as determined by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be required by the Engineer in an accurate, complete, and timely fashion. Resubmittals for the sole purpose of providing written responses to review comments will not be considered a resubmittal counting towards the two submission limit.

1.3 **SAMPLES**

- A. The Contractor shall submit samples when requested by the Engineer to establish conformance with the specifications, and as necessary to define color selections available. Submittals of "samples" shall be documented through the electronic submittal process by including a photograph of the item(s) and indicating the date the sample was mailed and/or delivered.

1.4 **OPERATION AND MAINTENANCE MANUALS**

- A. Operation and Maintenance (O&M) Manuals are required for certain elements of the project, as specified.
- B. The Contractor shall provide a completed Operation and Maintenance Manual Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of every Manual and signed by the Contractor and Manufacturer.
- C. O&M Manuals shall include operating and maintenance information on all systems and pieces of equipment. The manual shall contain sufficient data to install, operate, maintain, repair and rebuild all components of the equipment, design data specific to the project. Descriptions of operation should include procedures for both normal and emergency operation. All information required by the Operations and Maintenance Manual Certification Form described herein and any additional information deemed necessary by the Owner and Engineer for proper installation, operation and maintenance. Also include model numbers and serial numbers, as well as rated capacities and motor data, where applicable.
- D. Each hard copy of an O&M Manual shall be provided in a stand-alone binder or shall be suitable for insertion into a 3-ring binder. Include the General Contractor's and Manufacturer's representative's contact information on the front cover. O&M manuals must be appropriate for the project and customized for the project. If a Manufacturer's standard O&M manual is included in the submittal, all non-applicable content must be removed or crossed out.

1.5 **MANUFACTURER'S CERTIFICATES**

- A. Prior to accepting the installation, the Contractor shall submit manufacturer's certificates for each item specified.
- B. Such manufacturer's certificates shall state that the equipment has been installed under either the continuous or periodic supervision of the manufacturer's authorized

representative, that it has been adjusted and initially operated in the presence of the manufacturer's authorized representative, and that it is operating in accordance with the specified requirements, to the manufacturer's satisfaction. All costs for meeting this requirement shall be included in the Contractor's bid price.

1.6 **SUBMISSION REQUIREMENTS**

- A. Accompany submittals with a transmittal cover sheet, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. The sequential shop drawing number for each shop drawing, project data and sample submitted shall be:
 - a. Specification Section number followed by a dash and then a sequential number beginning with 01 (e.g., 16000-01).
 - b. Under limited situations when additional different pieces of equipment are submitted under the same specification section, those submittals shall be numbered sequentially (e.g. 05500-01, 05500-02, 05500-03, etc.).
 - c. Resubmittals shall include decimal point and an alphabetic suffix after the corresponding sequential number (e.g., 16000-01A).
 - d. O&M submittals shall be numbered with the Specification Section number followed by a dash, the letters "OM", another dash, and then a sequential number beginning with 01 (e.g. 16000-OM-01). Resubmittals of O&Ms shall include an alphabetic suffix after the corresponding sequential number (e.g., 16000-OM-01A).
 - 5. Notification of deviations from Contract Documents.
 - 6. Other pertinent data.
- B. A completed Contractor Submittal Certification Form shall be attached to each hardcopy and electronic PDF of each shop drawing and must include:
 - 1. Project name
 - 2. Specification Section and sequential number with alphabet suffix for resubmittal
 - 3. Description
 - 4. Identification of deviations from Contract Documents.
 - 5. Contractor's stamp, initialed or signed, certifying review of the submittal, verification of field measurements and compliance with Contract Documents.
 - 6. Where specified or when requested by the Engineer, manufacturer's certification that equipment, accessories and shop painting meet or exceed the Specification requirements.
 - 7. Where specified, manufacturer's guarantee.
- C. Additional Requirements for Electronic Submittals:
 - 1. Each individual shop drawing or O&M submittal shall be contained in one PDF.
 - 2. The first page of the PDF shall be the Contractor Submittal Certification Form as described above.
 - 3. The electronic PDF shall be **exactly** as submitted in the hardcopy.
 - 4. The electronic PDF shall include an electronic table of contents that is bookmarked for each section of the submittal.
 - 5. The electronic PDF shall be configured such that is fully searchable.

6. PDF versions of 24x36 drawings shall be converted to 24 x 36 PDFs so as not to lose the clarity of the original drawing.
7. Electronic PDF submittals that are not submitted in accordance with the requirements stated above will not be reviewed by the Engineer.
8. Electronic submittals shall be transmitted via the protocol established in Part 1 above.

1.7 **RESUBMISSION REQUIREMENTS**

- A. Revise initial submittals as required and resubmit as specified for initial submittal.
- B. Indicate on submittals any changes which have been made other than those required by Engineer. All renumbering of shop drawings, relabeling of individual pieces or assemblies or relocating of pieces or assemblies to other Drawings within the submittal shall be clearly brought to the attention of the Engineer.

1.8 **ENGINEER'S REVIEW**

- A. The review of shop and working drawings hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.
- B. The Engineer's review comments will be summarized on a Submittal Review Form, which includes an action code. A description of each action code is provided below.
 1. No Exceptions Taken (Status 0 on shop drawing log). The shop drawing complies with the Contract Document requirements. No changes or further information are required. Where appropriate, the submittal review form will be used to alert the Contractor, Owner and Field personnel of remaining items within that specification section that still needs to be submitted.
 2. Make Corrections Indicated (Status 1 on shop drawing log). The shop drawing complies with the Contract Document requirements except for minor changes, as indicated. Engineer requires that all comments will be addressed by the Contractor, unless otherwise notified in writing prior to execution of the relevant work.
 3. Conditional to Remarks (Status 2 on shop drawing log). The shop drawing potentially complies with the Contract Document requirements, contingent upon satisfactory resolution of review comments. Remarks will explicitly list what information needs to be resubmitted. Resubmittal from the Contractor should include a cover letter or summary which indicates how each review comment has been addressed. **This action code will not be used, or will be sparingly used, for electronic submittals.**
 4. Revise and Resubmit (Status 3 on shop drawing log). The shop drawing does not comply with the Contract Document requirement as submitted, but may with changes indicated and/or submission of additional information. The entire package must be resubmitted with the necessary information and a cover letter which indicates how each review comment has been addressed and where to find the information in the resubmittal.

5. Rejected (Status 4 on shop drawing log). The shop drawing does not comply with the Contract Document requirements, for the reasons indicated in the remarks, and is unacceptable.
6. In Review (Status 5 on shop drawing log). The shop drawing is currently under review.
7. For Information Only (Status 6 on shop drawing log). The shop drawing review was for information only.

CONTRACTOR SUBMITTAL CERTIFICATION FORM

PROJECT: _____ CONTRACTOR'S PROJ. NO: _____

CONTRACTOR: _____ ENGINEER'S PROJ. NO: _____

ENGINEER: _____

SHOP DRAWING NUMBER:	SPECIFICATION SECTION OR DRAWING NO:	SEQUENTIAL NUMBER (& ALPHA SUFFIX FOR RESUBMITTAL)
----------------------------	---	--

DESCRIPTION: _____

MANUFACTURER: _____

The above referenced submittal has been reviewed by the undersigned and I/we certify that the material and/or equipment meets or exceeds the project specification requirements with

NO DEVIATIONS
or
 A COMPLETE LIST OF DEVIATIONS AS FOLLOWS^a:

By: _____ By: _____

Contractor^bManufacturer^c

Date: _____ Date: _____

a Any deviations not brought to the attention of the Engineer for review and concurrence shall be the responsibility of the Contractor to correct, if so directed.

b Required on all submittals

c When required by specifications Page ____ of ____

General Contractor's Stamp

END OF SECTION

SECTION 01380PRE-CONSTRUCTION PHOTOGRAPHSPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included:

1. Pre-Construction Record: Contractor shall utilize digital photographs and video to obtain a visual record of the project area; copies of same shall be given to the Engineer and Owner.
2. Notify Engineer at least three (3) working days prior to photographing or videoing the project area so Engineer may, at his option, observe.

1.2 QUALITY

A. Pre-Construction Record: Quality shall be such that the condition of existing pavement, curbing, driveway entrances, sidewalks, etc. can be readily determined.

1.3 1.3 SUBMITTAL OF PRINTS

A. Pre-Construction Record: Submit hard copy prints and electronic files on CD ROM, and video electronic files on DVD to the Engineer and Owner prior to any construction work.

B. The quality of the photos and video are subject to approval by the Engineer prior to the start of construction work in the areas shown by the photos.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. General Quality Control.
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.
- E. Manufacturer's Field Services.
- F. Testing Laboratory Services.

1.2 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions: Inspection and testing required by governing authorities.
- B. Section 01340 - Submittals: Submittal of Manufacturer's Instructions.
- A. Section 02200 - Earthwork.
- B. Section 02513 – Bituminous Concrete Pavement
- C. Section 02568 – Pressure Testing and Chemical Grouting of Sanitary Sewer main Joints
- D. Section 02752 – Sewer Line Cleaning
- E. Section 02756 – Sewer Pipe Relining
- F. Section 02758 – Manhole Rehabilitation
- G. Section 02765 – Service Lateral Connection Liner

1.3 QUALITY CONTROL

- A. Maintain quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.

1.4 WORKMANSHIP

- A. Comply with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. Perform work by persons qualified to produce workmanship of specified quality.
- C. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking.

1.5 MANUFACTURERS' INSTRUCTIONS

- A. Comply with instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

1.6 MANUFACTURERS' CERTIFICATES

- A. When required by individual Specifications Section, submit manufacturer's certificate that products meet or exceed specified requirements.

1.7 MANUFACTURERS' FIELD SERVICES

- A. When specified in respective Specification Sections, require supplier and/or manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Representative shall submit written report to Engineer listing observations and recommendations.

1.8 TESTING LABORATORY SERVICES

- A. Owner will employ and pay for services of an Independent Testing Laboratory to perform inspections, tests, and other services wherever an Independent Testing Laboratory is required by individual specification sections listed in paragraph 1.2 above, unless otherwise indicated.
- B. Services will be performed in accordance with requirements of governing authorities and with specified standards.
- C. Reports will present observations and test results and indicate compliance or non-compliance with specified standards and with Contract Documents. Independent Testing Laboratory will submit one copy of each report directly to each of the following: Engineer, Resident Project Representative, Contractor. Reports will be mailed within 5 days of obtaining test results. If test results indicate deficiencies, Independent Testing Laboratory shall telephone or FAX results to Engineer, Resident Project Representative and Contractor within 24 hours.
- D. Contractor shall cooperate with Independent Testing Laboratory personnel; furnish tools, samples of materials, design mix, equipment, storage and assistance as requested.
- E. Contractor shall coordinate all testing work and shall notify Engineer and Independent Testing Laboratory at least 24 hours prior to performing work requiring testing services. If scheduled tests or sampling cannot be performed because the work is not ready as scheduled, testing costs associated with the delay will be determined by Engineer and invoiced by Owner to Contractor. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price. If adequate notice is not provided, Contractor shall suspend work on that portion of the Project until testing can be performed. Such suspension will not be grounds for a claim against the Owner for delay, nor will it be an acceptable basis for an extension of time.
- F. Payment for Independent Testing Laboratory services shall be as follows:
 1. General: Where testing is the Owner's responsibility, payment will be made as stated below unless other requirements are given in Specification Sections. Testing which is the responsibility of the Contractor will be considered an incidental item unless otherwise indicated in Section 01150, Measurement and Payment.
 2. Initial Testing: Owner will pay for initial tests.
 3. Retesting: Costs of retesting due to non-compliance will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount will be deducted from the Contract Price.
 4. Contractor's Convenience Testing: Inspections and tests performed for Contractor's convenience will be paid for by Contractor.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01562DUST CONTROLPART 1 - GENERAL1.1 DESCRIPTIONS

A. Work Included:

1. Furnish and apply water or calcium chloride on the road surfaces within the construction site, when required to control dust and when directed by the Engineer.
2. When dust control is not included as a separate item in the Contract, the work shall be considered incidental to the appropriate items of the Contract.

PART 2 - PRODUCTS2.1 MATERIALS

- A. Water for Sprinkling:
- B. Clean, free of salt, oil, and other injurious matter.
- C. Calcium Chloride:
 1. Meet the requirements of AASHTO M144.

PART 3 - EXECUTION3.1 APPLICATION

- A. Water:
 1. Apply water by methods approved by the Engineer.
 2. Use approved equipment including a tank with gauge equipped pump and spray bar.
- B. Calcium Chloride:
 1. Apply at a rate sufficient to maintain a damp surface but low enough to assure non-contamination of water courses.
 2. Apply water prior to calcium chloride addition.

END OF SECTION

SECTION 01570

TRAFFIC REGULATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Provide all materials and perform all work necessary to completely regulate traffic in the area of Work.
 - 2. Perform all work in such a manner as to provide safe passage at all times for the public and with a minimum of obstruction to traffic.
 - 3. Do not close roads or streets to passage of the public without the permission of the proper authorities.
- B. The local police department and/or the CT State Police will decide if safe passage is being maintained and shall have the authority to require the Contractor to take any additional steps necessary to maintain safe passage.
- C. Minimize the length of delays or traffic stoppage to the extent practicable. Maximum traffic stoppage time shall be 10 minutes.
- D. The Contractor's designated traffic control representative shall respond to all traffic safety complaints and be available to direct traffic control subcontractors the entire time work is occurring on site. If the designated representative is not on site for a period of time, another on site representative shall be designated by the Contractor for that period.
- E. The Contractor shall protect all phases of the work from damage due to traffic, etc., and provide necessary watchmen, flag person and/or police officer.

1.2 SCHEDULING WORK

- A. During the Project Pre-Construction Meeting one Contractor representative will be designated as the coordinator between the Police Department and subcontracted traffic control.
- B. Schedule all work so that two adjacent parallel streets are not closed to passage by the public at any one time, if at all possible. Streets may be completely closed to traffic only upon written order of the Engineer. If permanent repairs are not completed immediately, the pavement surface along the line of work shall be maintained in a condition comparable to the adjacent road surface
- C. Revise the plan of work if it will create a traffic hazard or an unreasonably long detour.
- D. Do not start work in any new location without the permission of the Engineer.
- E. Notify all police, fire departments and Town of Trumbull Board of Education (for school bus route coordination) in writing at least 24 hours in advance of all scheduled detours and when streets are reopened. The Contractor shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well-lighted, in order to minimize confusion.

PART 2 - PRODUCTS

2.1 WARNING SIGNS AND BARRICADES

- A. Traffic control (plans, methods and devices) shall be as outlined in Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) as published by U. S. Department of Transportation, and any local and state requirements.
- B. Provide adequate warning signs, barricades, signal lights, flaggers/uniformed police officers, and take other necessary precautions for the safety of the public.
- C. Provide and illuminate suitable warning signs to show where construction, barricades or detours exist.
- D. Provide barricades of substantial construction and painted with a finish that increases visibility at night, as outlined in the MUTCD.
- E. Keep signal lights illuminated at all barricades and obstructions from sunset to sunrise.
- F. Maintain all necessary signs, barricades, lights, watchmen and other safety precautions during authorized suspension of the Work, weekends, holidays or other times when the Work is not in progress.
- G. Contractor shall make periodic inspection throughout the day of the traffic control patterns, methods, signs and other devices to ensure that they are properly placed.

2.2 UNIFORMED POLICE OFFICER

- A. A uniformed police officer is a police officer (local, county or state) on regular or special duty dressed in uniform with the necessary high visibility vest and apparel needed for traffic control.
- B. Arrange the police detail with the local Chief of Police, County Sheriff, or State Police Captain depending on jurisdiction.

2.3 FLAG PERSON

- A. A flag person is a trained and certified individual assigned specifically to the task of directing traffic and is outfitted in the necessary high visibility vest and apparel needed for traffic control.
- B. Flag persons shall be provided by the Contractor.

PART 3 - EXECUTION

3.1 TRAFFIC CONTROL WORK PLAN

- A. Submit a traffic control work plan to the Owner for approval prior to construction. The traffic plan shall encompass all scenarios anticipated (i.e. shoulder closure, lane closure, center of road work zone, work zone in close proximity to intersection, etc.). The location of uniformed police officers, certified flagmen, and work zone traffic control devices shall be set according to the approved traffic control work plan.
- B. Traffic control work plan must be submitted to owner and engineer, and approved prior to commencing work.

3.2 DETOURS

- A. Provide, identify and maintain suitable detours when the project, or any part thereof, is closed to public travel.
- B. When the closed part of the project is reopened, restore the detour area and any other disturbed areas to the original condition.

3.3 INCONVENIENCE TO RESIDENTS OF VICINITY

- A. Whenever a traveled way is closed, perform the Work in such a manner that local travel, residents and businesses in the vicinity of the Work will be inconvenienced as little as possible.
- B. Allow access to residents and abutting land owners along the project to driveways and other normal outlets from their property.
- C. Where necessary, bridges shall be constructed and maintained for residents. Before closing any driveway or entrance, the Contractor shall give the owner or resident of the property involved, due notice of such temporary closing. When this is not practicable and an emergency arises, the Contractor shall, on the order of the Engineer, provide a satisfactory place to house temporarily, any motor vehicle, which may be prevented from being housed at night.
- D. Excavated materials and equipment shall be placed in such position as not to unnecessarily impede travel on the streets, or access to driveways. A sufficient clear space for pedestrian travel shall be maintained on the sidewalks, and all property entrances and driveways shall be kept clear, where possible.
- E. People living or having business within the barricaded zone shall be permitted to use the highway for auto traffic if possible.

3.4 TRAFFIC CONTROL OFFICERS

- A. Where required by the local, county or state police departments and/or when specified, traffic control officer shall be Uniformed Police Officers.
- B. Where the local, county or state police departments do not wish to or are unable to furnish traffic control officers and/or when specified, the traffic control officers shall be flag person.

END OF SECTION

SECTION 01710

PROJECT CLEANING

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. Maintain premises and public properties free from accumulations of waste, debris, and rubbish, caused by operations.
2. At completion of work, remove waste materials, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces. Leave project clean and ready for use.

1.2 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Conduct cleaning and disposal operations in accordance with all applicable local and state laws, ordinances, and code requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Use only cleaning materials recommended by manufacturer of surfaces to be cleaned.
- B. Use cleaning materials only on surfaces recommended by cleaning material manufacturers.

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Cleaning During Construction:

1. Execute cleaning operations to ensure that buildings, grounds, and public properties are maintained free from accumulations of waste materials and rubbish.
2. Entirely remove and dispose of material or debris during the progress of the work that has washed into or has been placed in watercourses, ditches, gutters, drains, catch basins, or elsewhere as a result of the Contractor's operations.
3. Wet down dry materials and rubbish to lay dust and prevent blowing dust.
4. At reasonable intervals during the progress of work, clean the site and dispose of waste materials, debris, and rubbish.
5. Handle materials in a controlled manner with as few handlings as possible. Do not drop or throw material from heights.
6. When applicable, schedule cleaning operations so that dust and other contaminants resulting from the cleaning process will not fall on wet, newly painted surfaces.

B. Control of Hazards:

1. Store volatile wastes in covered metal containers, and remove from premises daily.
2. Prevent accumulation of wastes which may create hazardous conditions.
3. Provide adequate ventilation during use of volatile or noxious substances.

C. Disposal:

1. Do not burn or bury rubbish and waste materials on project site.
2. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.
3. Do not dispose of wastes into streams or waterways.

D. Final Cleaning:

1. Employ experienced workmen, or professional cleaners, for final cleaning.
2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from all sight-exposed interior and exterior finished surfaces.
3. Repair, patch and touch up marred surfaces to specified finishes.
4. Broom clean paved surfaces.
5. Rake clean non-paved surfaces of the project site.
6. Restore to their original condition those portions of the site not designated for alterations by the Contract Documents.

END OF SECTION

SECTION 01720
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Keep accurate record documents for all additions, demolition, changes of material or equipment (from that shown on the Drawings), variations in work, and any other additions or revisions to the Contract (via Change Order, Work Change Directive, Field Order or Clarification).
 - 2. Records shall be kept current as the work progresses. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests. Failure to provide records shall also be grounds for withholding of final payment and, if beyond contract time, shall be grounds for imposing liquidated damages.
- B. Related Work Specified Elsewhere:
 - 1. Shop Drawings, Project Data, and Samples are specified in "General Conditions" and Section 01340, Submittals.

1.2 MAINTENANCE OF DOCUMENTS

- A. Maintain at job site, one copy of:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Reviewed Shop Drawings
 - 5. Change Orders
 - 6. Any other modifications to the Contract
 - 7. Field Test Reports
- B. Store documents in files and racks specifically identified for this use, that are apart from documents used for construction.
- C. File documents in a logical manner indexed for easy reference.
- D. Maintain documents in clean, dry, legible condition.
- E. Do not use record documents for construction purposes.
- F. Make documents available at all times for inspection by the Engineer and Owner, and by the end of the project, transmit these documents to the Engineer.

1.3 RECORDING

- A. Label each document "PROJECT RECORD" in large high printed letters.
- B. Keep record documents current and do not permanently conceal any work until required information has been recorded.
- C. General Field Recording Requirements for Rehabilitation Type Projects:
 - 1. Manhole Rehabilitation
 - a. Provide a typed list of the work performed at each location (ex. installed new frame and cover, sealed manhole, lined bench and channel, etc.).

- b. Provide digital photographs of the completed manhole.
 - c. Provide digital photograph of the ground surface at the completed manhole including background features such as a building or other landmark to assist the Owner in locating the manhole rehabilitated.
- 2. Pipeline Rehabilitation
 - a. Provide the Owner with DVD recordings, television inspection logs and photographs of pre and post conditions of all pipelines rehabilitated.
 - b. See applicable Division 2 Specifications for additional requirements.
- D. General Field Recording Issues for Installation Type Projects:
 - 1. All ties should be taken from existing, permanent features such as utility poles, corners of houses and hydrants. Porches, sheds or other house additions should be avoided for they could be torn down. A minimum of two ties should be taken.
 - 2. Inverts should be recorded to the nearest hundredth of a foot.
 - 3. Elevations should be recorded to the nearest hundredth of a foot.
- E. Project Record Drawings - Legibly mark Contract Drawings to record existing utilities and actual construction of all work, including but not limited to the following (where applicable):
 - 1. Existing Utilities
 - a. Water mains and services, water main gate valves, sewer mains and services, storm drains, culverts, steam lines, gas lines, tanks and other existing utilities encountered during construction must be accurately located and shown on the Drawings. In congested areas supplemental drawings or enlargements may be required.
 - b. Show any existing utilities encountered in plan and profile and properly labeled showing size, material and type of utility. Ties should be shown on plan. Utility should be drawn to scale in section (horizontally and vertically) and an elevation should be called out to the nearest hundredth of a foot.
 - c. When existing utility lines are broken and repaired, ties should be taken to these locations.
 - d. If existing water lines are replaced or relocated, document the area involved and pipe materials, size, etc. in a note, and with ties.
 - 2. Manholes
 - a. Show ties to center of structure covers or hatches.
 - b. In general, show inverts at center of structures. However, for manholes with drop structures, or steep channels (greater than 0.2' change on slope), show inverts at face of manhole.
 - c. Show inverts for other structures at the face of the structure.
 - d. Show any field or office redesigns.
- F. Specifications and Addenda - Legibly mark up each section to record:
 - 1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
 - 2. Changes made by Change Order, Field Order, or other method.

1.4

SUBMITTALS

- A. At the completion of the project, and prior to the release of retainage, deliver record documents to the Engineer.

1. Record drawings shall be provided as a bound paper set of computer generated drawings, an electronic file (pdf format) of the bound paper set, and electronic files in AutoCAD format. Ownership of the drawings and files shall pass to the Owner at the time of submittal.
- B. Accompany submittal with transmittal letter, in duplicate, containing:
 1. Date, project title and number.
 2. Contractor's name and address.
 3. Title and number of each record document with certification that each document is completed and accurate.
 4. Signature of Contractor, or his authorized representative.
- C. Failure to supply all information on the Project Record Drawings as specified in Part 1.3 may result in additional retainage from monthly partial payment requests, and in non-approval of final payments of the Contract and/or if contract time (as specified in accordance with the Standard General Conditions of the Construction Contract) has elapsed, this shall be grounds for the enactment of the liquidated damages as specified.

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION

3.1 MAINTAINING AND PROVIDING RECORDS

- A. Records shall be kept current as the work progresses.
- B. Records shall be made available for review by the Owner, Engineer, Resident Project Representative and/or Funding Agency(s) upon request.
- C. Failure to maintain current records, as specified herein, shall be grounds for withholding additional retainage from monthly partial payment requests.
- D. Failure to provide records shall be grounds for withholding of final payment and, if beyond contract time, shall be grounds for imposing liquidated damages.

END OF SECTION

SECTION 02200EARTHWORKPART 1 - GENERAL**1.1 DESCRIPTION**

- A. The Work described by this Section consists of all earthwork encountered and necessary for construction of the project as indicated in the Contract Documents, and includes but is not limited to the following:
 - 1. Excavation
 - 2. Backfilling and Filling
 - 3. Compaction
 - 4. Providing soil material as necessary
 - 5. Disposal of excess suitable material and unsuitable materials
- B. Related Work Specified Elsewhere:
 - 1. Traffic Regulation is specified in Division 1.
 - 2. Surface restoration is specified in the appropriate sections of this Division.
 - 3. Section 01400 - Quality Control.

1.2 QUALITY ASSURANCE

- A. Requirements of Regulatory Agencies:
 - 1. All work shall be performed and completed in accordance with all local, state and federal regulations.
 - 2. The General Contractor shall secure all other necessary permits unless otherwise indicated from, and furnish proof of acceptance by, the municipal and state departments having jurisdiction and shall pay for all such permits, except as specifically stated elsewhere in the Contract Documents.
- B. Testing Methods:
 - 1. Gradation Analysis: Where a gradation is specified the testing shall be in accordance with ASTM C-117-90 and ASTM C-136-93 (or latest revision).
 - 2. Compaction Control:
 - a) Unless otherwise indicated, wherever a percentage of compaction for backfill is indicated or specified, it shall be the in-place density divided by the maximum density and multiplied by 100. The maximum density shall be the density at optimum moisture as determined by ASTM Standard Methods of Test for Moisture-Density Relations of Soil Using 10-lb. Hammer and 18-in. Drop, Designation D-1557-91 (Modified Proctor), or latest revision, unless otherwise indicated.
 - b) The in-place density shall be determined in accordance with ASTM Standard Method of Test for Density of Soil in Place by the Sand Cone method, Designation D 1556-90, (or latest revision) or Nuclear method Designation D2922.

- c) Wherever specifically indicated, maximum density at optimum moisture may be determined by ASTM Standard Methods of Test for Moisture Density Relations of Soils, ASTM D-698-91 (Standard Proctor).
- d) An Independent Testing Laboratory will be retained by the Owner to conduct all laboratory and field soil sampling and testing, and to observe earth work and foundation construction activities. Laboratory testing will consist of sieve analyses, natural water content determinations, and compaction tests. Field testing will consist of in-place field density tests and determination of water contents.

1.3 SUBMITTALS

- A. Collection of samples and testing of all materials for submittals shall be performed by the Independent Testing Laboratory and paid for by the Contractor until the materials are approved by the Owner or Engineer.
- B. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.
- C. Submit test results (including gradation analysis) and source location for all borrow material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.
- D. Submit moisture density curve for each type of soil (on site or borrow material) to be used for embankment construction or fill beneath structures or pavement.

1.4 TESTS

The Independent Testing Laboratory shall conform to the following procedures and standards:

- A. Submit test results in accordance with the procedure specified in the General and Supplementary Conditions.
- B. All testing shall be performed by a qualified Independent Testing Laboratory acceptable to the Engineer and Contractor at the Owner's expense unless otherwise indicated (see Section 01400 - Quality Control).
- C. Paved Areas: Make at least one field density test of subgrade for every 2,000 sq. ft. of paved area, but in no case less than 1 test. In each compacted fill layer, make one field density test for every 2,000 sq. ft. of paved area, but in no case less than 1 test.
- D. In addition to the above tests the Independent Testing Laboratory will perform additional density tests at locations and times requested by the Engineer.
- E. Additional density testing will be required by the Engineer if the Engineer is not satisfied with the apparent results of the Contractor's compaction operation.
 - 1. If the test results fail to meet the requirements of these specifications, the Contractor shall undertake whatever action is necessary, at no additional cost to the Owner, to obtain the required compaction. The cost of retesting will be paid by Owner. The cost of retesting will be determined by Engineer and Owner will invoice Contractor for this cost. If unpaid after 60 days, the invoice amount for retesting will be deducted from the Contract Price. No allowance will be considered for delays in the performance of the work.

2. If the test results pass and meet the requirements of these Specifications, the cost of the testing service will be borne by the Owner, but no allowance will be considered for delays in the performance of the work.

1.5 JOB CONDITIONS

- A. Site Information:
 1. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner and Engineer will not be responsible for interpretations or conclusions drawn therefrom by the Contractor. Data are made available for the convenience of Contractor.
 2. Additional test borings and other exploratory operations may be made by Contractor at no additional cost to Owner.
- B. Existing Utilities and Structures:
 1. The locations of utilities and structures shown on the Drawings are approximate as determined from physical evidence on or above the surface of the ground and from information supplied by the utilities. The Engineer in no way warranties that these locations are correct. It shall be the responsibility of the Contractor to determine the actual locations of any utilities or structures within the project area.

PART 2 - PRODUCTS

2.1 SOIL MATERIAL

- A. Processed Aggregate Sub-base: Shall be screened or crushed gravel of hard durable particles free from vegetable matter, lumps or balls of clay and other deleterious substances. Processed Gravel for base shall not contain particles of rock that will not pass the 4 inch square mesh sieve. The material shall conform to CT DOT Specification Section M.05.01. The gradation of the material shall meet the following grading requirements:

<u>Sieve Designation</u>	<u>Percent by Weight Passing Square Mesh Sieves</u>
2 1/2 inches	100
2 inches	95-100
3/4 inch	50-75
1/4 inch	25-45
No. 40	5-20
No. 100	2-12

- B. Common Borrow:

1. Well graded granular material having no rocks with a maximum dimension over 6-inches, except where it is used for pipe bedding in which case the maximum size shall be 2-inches.
2. Free from frozen material and other unsuitable material.

3. That portion passing a three inch square mesh sieve shall contain not more than 70 percent passing a 1/4 inch mesh sieve and not more than 10 percent passing a number 200 mesh sieve when used as pipe bedding material and not more than 5 percent passing a number 200 mesh sieve when used as backfill around structures

PART 3 - EXECUTION

3.1 INSPECTION

- A. Examine the areas and conditions under which excavating, backfilling, filling, compaction and grading are to be performed and notify the Engineer in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 EXCAVATION

A. General:

1. Excavation consists of removal and disposal of all material encountered when establishing line and grade elevations required for execution of the work.
2. The Contractor shall make excavations in such manner and to such widths as will give suitable room for performing all work required by the Contract Documents; shall furnish and place all sheeting, bracing, and supports; shall do all cofferdamming, pumping, and draining; and shall render the bottom of the excavations firm, dry and acceptable in all respects.
3. Earth Excavation shall consist of the removal, hauling and disposal of all earth materials encountered during excavation including but not limited to native soil or fill, pavement (bituminous or concrete), existing sewers and manholes, ashes, loam, clay, swamp muck, debris, soft or disintegrated rock or hard pan which can be removed with a backhoe, or a combination of such materials, and boulders that do not meet the definition of "Ledge" below.
4. The Contractor shall not have any right of property in any materials taken from any excavation. Do not remove any such materials from the construction site without the approval of the Engineer. This provision shall in no way relieve the Contractor of his obligations to remove and dispose of any material determined by the Engineer to be unsuitable for backfilling. The Contractor shall dispose of unsuitable and excess material in accordance with the applicable sections of the Contract Documents.
5. All excavated materials designated by the Engineer as unsuitable shall become the property of the Contractor and disposed of at locations in accordance with all State and local laws and the provisions of the Contract Documents.

B. Unauthorized Excavation: Shall consist of removal of materials beyond indicated subgrade elevations or dimensions without specific authorization of Engineer. Unauthorized excavation, as well as remedial work required by the Engineer shall be at the Contractor's expense. Remedial work required is as follows:

1. If the bottom of an excavation is excavated beyond the limits indicated, backfill the resulting void with thoroughly compacted common borrow or screened stone as directed by the Engineer.

2. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Engineer.
- C. Protection of Persons, Property and Utilities:
 1. Barricade open excavations occurring as part of this work and post with warning lights in compliance with local and State regulations.
 2. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations. Exercise extreme caution and utilize sheeting, bracing, and whatever other precautionary measures that may be required.
 3. Rules and regulations governing the respective utilities shall be observed in execution of all work. Active utilities and structures shall be adequately protected from damage, and removed or relocated only as indicated or specified. Inactive and abandoned utilities encountered in excavation and grading operations shall be removed, plugged or capped only with written authorization of the utility owner. Report in writing to the Engineer, the locations of such abandoned utilities. Extreme care shall be taken when performing work in the vicinity of existing utility lines, utilizing hand excavation in such areas, as far as practicable.
 4. Repair, or have repaired, all damage to existing utilities, structures, lawns, other public and private property which results from construction operations, at no additional expense to the Owner, to the complete satisfaction of the Engineer, the utility, the property owner, and the Owner.
- D. Stability of Excavations:
 1. Slope sides of excavations to comply with all codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.
 2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- E. Shoring and Bracing:
 1. Provide materials for shoring and bracing, such as sheet piling, uprights, stringers and cross-braces, in good serviceable condition.
 2. Provide trench shoring and bracing to comply with local, State and Federal codes and authorities having jurisdiction, including the Occupational Safety and Health Act. The Contractor shall be responsible for the design and construction of the excavation support system. The excavation support system shall be designed by a CT licensed Professional Engineer.
 3. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Install shoring and bracing as excavation progresses.
- F. Material Storage:
 1. Stockpile excavated materials which are satisfactory for use on the work until required for backfill or fill. Place, grade and shape stockpiles for proper drainage and protect with temporary seeding or other acceptable methods to control erosion.
 2. Locate and retain soil materials away from edge of excavations.

3. Dispose of excess soil material and waste materials as herein specified.

G. Dewatering:

1. To ensure proper conditions at all times during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdowns) with which to intercept and/or remove promptly and dispose legally and properly of all water entering trenches and other excavations (including surface and subsurface waters).
2. Excavations shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.
3. Any damage as a result of the Contractor's dewatering operations to work in progress or private or municipal property shall be promptly repaired by the Contractor to the satisfaction of the Engineer at the Contractor's expense.

H. Cold Weather Protection:

1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F.
2. No frozen material shall be used as backfill or fill and no backfill shall be placed on frozen material.

I. Separation of Surface Material:

1. The Contractor shall remove only as much of any existing pavement as is necessary for the prosecution of the work.
2. Prior to excavation, existing pavement shall be cut where in the opinion of the Engineer it is necessary to prevent damage to the remaining road surface.
3. Where pavement is removed in large pieces, it shall be disposed of before proceeding with the excavation.
4. From areas within which excavations are to be made, loam and topsoil shall be carefully removed and separately stored to be used again as directed; or, if the Contractor prefers not to separate surface materials, he shall furnish, as directed, loam and topsoil at least equal in quantity and quality to that excavated.

J. Dust Control:

1. During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities, including sweeping and sprinkling of streets as necessary, so as to minimize the creation and dispersion of dust. Refer to Specification Section 01562.
2. If the Engineer decides that it is necessary to use calcium chloride for more effective dust control, the contractor shall furnish and spread the material, as directed.

3.3 BACKFILL AND FILL

A. General:

1. Backfilling shall consist of replacing material removed to permit installation of structures or utilities, as indicated in the Contract Documents.
2. Filling shall consist of placing material in areas to bring them up to grades indicated on the Drawings.
3. The Contractor shall provide and place all necessary backfill and fill material, in layers to the required grade elevations.

4. Backfill excavations as promptly as work permits, but not until completion of the following:
 - a. Acceptance by Engineer of construction below finish grade including, where applicable, dampproofing, waterproofing, and perimeter insulation.
 - b. Inspection, approval, and recording locations of underground utilities.
 - c. Removal of formwork.
 - d. Removal of shoring and bracing, and backfilling of voids with satisfactory materials. Temporary sheet piling driven below bottom of structures shall be removed in manner to prevent settlement of the structure or utilities, or cut off and left in place if required.
 - e. Removal of trash and debris.
 - f. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
 - g. Density testing having results meeting requirements specified herein.
5. In general, and unless otherwise indicated, material used for backfill of trenches and excavations around structures shall be suitable excavated material which was removed in the course of making the construction excavation. Unless otherwise specified or allowed by the Engineer the backfill and fill shall be placed in layers not to exceed 8 inches in thickness.
6. All fill and backfill under structures and pavement, and adjacent to structures, shall be compacted crushed stone or common borrow as specified or as indicated on the Drawings. The fill and backfill materials shall be placed in layers not exceeding 8 inches in thickness.
7. All structures (including manholes) shall be placed on a 6-inch mat of screened stone unless otherwise indicated.
8. Suitable excavated material shall meet the following requirements:
 - a. Free from large clods, silt lumps or balls of clay.
 - b. Free from stones and rock fragments with larger than 12 inch max. dimension.
 - c. Free from organics, peat, etc.
 - d. Free from frozen material.
9. If sufficient suitable excavated material is not available from the excavations, and where indicated on the Drawings, the backfill material shall be common borrow, unless otherwise indicated, as required and as directed by the Engineer.
10. Do not backfill with, or on, frozen materials.
11. Remove, or otherwise treat as necessary, previously placed material that has frozen prior to placing backfill.
12. Do not mechanically or hand compact material that is, in the opinion of the Engineer, too wet.
13. Do not continue backfilling until the previously placed and new materials have dried sufficiently to permit proper compaction.
14. The nature of the backfill materials will govern the methods best suited for their placement and compaction. Compaction methods and required percent compaction is covered in Compaction section.

15. Before compaction, moisten or aerate each layer as necessary to provide a water content necessary to meet the required percentage of maximum dry density for each area classification specified.
16. Do not allow large masses of backfill material to be dropped into the excavation in such a manner that may damage pipes and structures.
17. Place material in a manner that will prevent stones and lumps from becoming nested.
18. Completely fill all voids between stones with fine material.
19. Do not place backfill on or against new concrete until it has attained sufficient strength to support loads without distortion, cracking, and other damage.
20. Deposit backfill and fill material evenly on all sides of structures to avoid unequal soil pressures.
21. Keep stones or rock fragments with a dimension greater than two inches at least one foot away from the pipe or structure during backfilling.
22. Leave sheeting in place when damage is likely to result from its withdrawal.
23. Completely fill voids left by the removal of sheeting with screened stone which is compacted thoroughly.

3.4 COMPACTION

- A. General:
 1. Control soil compaction during construction to provide not less than the minimum percentage of density specified for each area classification.
- B. Percentage of Maximum Density Requirements:
 1. Compact soil to not less than the following percentages of maximum dry density determined in accordance with ASTM D1557 as indicated.
 - a. Off Traveled Way Areas: Compact each layer of backfill or fill material to at least 90% of maximum dry density (ASTM D1557).
 - b. Walkways: Compact each layer of backfill or fill material to at least 93% of maximum dry density (ASTM D1557).
 - c. Roadways, Drives and Paved Areas: Compact each layer of fill, subbase material, and base material to at least 95% of maximum dry density (ASTM D1557).
- C. Moisture Control:
 1. Where subgrade or a layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, in quantities controlled to prevent free water appearing on surface during or subsequent to compaction operations.
 2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.
 3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory level.
- D. Compaction Methods: The Contractor may select any method of compaction that is suitable to compact the material to the required density.
 1. General: Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between

stones shall be completely filled with fine material. All voids left by the removal of sheeting shall be completely backfilled with suitable materials and thoroughly compacted.

2. Tamping or Rolling: If the material is to be compacted by tamping or rolling, the material shall be deposited and spread in uniform, parallel layers not exceeding the uncompacted thicknesses specified. Before the next layer is placed, each layer shall be tamped as required so as to obtain a thoroughly compacted mass. Care shall be taken that the material close to the excavation side slopes, as well as in all other portions of the fill area, is thoroughly compacted. When the excavation width and the depth to which backfill has been placed are sufficient to make it feasible, and it can be done effectively and without damage to the pipe or structure, backfill may, on approval, be compacted by the use of suitable rollers, tractors, or similar powered equipment instead of by tamping. For compaction by tamping or rolling, the rate at which backfilling material is deposited shall not exceed that permitted by the facilities for its spreading, leveling, and compacting as furnished by the Contractor.
- E. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

3.5 **GRADING:**

- A. General:
 1. Grading shall consist of that work necessary to bring all areas to the final grades.
 2. Uniformly grade areas within limits of work requiring grading, including adjacent transition areas.
 3. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.
- B. Compaction:
 1. After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.
- C. Protection of Graded Areas:
 1. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
 2. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

3.6 **BASE PROCESSED AGGREGATE**

- A. General:
 1. Base course consists of placing the specified materials in layers to support a paved surface, as indicated in the Drawings.
- B. Grade Control:
 1. During construction, maintain lines and grades including crown and cross-slope of base.
- C. Placing:

1. Place base on prepared subbase conforming to indicated cross-section and thickness. Maintain optimum moisture content for compacting base materials.
2. Place base, conforming to indicated cross-section and thickness. Maintain optimum moisture content for compaction.

D. Shaping and Compacting:

1. All layers of aggregate shall be compacted to the required density immediately after placing. As soon as the compaction of any layer has been completed, the next layer shall be placed.
2. The Contractor shall bear full responsibility for and make all necessary repairs to the subgrade until the full is placed and compacted. Repairs shall be made at no additional cost to the Owner.
3. If the aggregate base or leveling course becomes contaminated by degradation of the aggregate or addition of foreign materials, the contaminated material shall be removed and replaced with the specified material at the Contractor's expense.

END OF SECTION

SECTION 02270

TEMPORARY EROSION CONTROL

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included:

1. The work under this section shall include provision of all labor, equipment, materials and maintenance of temporary erosion control devices, as specified herein and as directed by the Engineer.
2. Erosion control measures shall be provided as necessary to correct conditions that develop prior to the completion of permanent erosion control devices, or as required to control erosion that occurs during normal construction operations.
3. Construction operations shall comply with all federal, state and local regulations pertaining to erosion control.
4. After awarding of or after being awarded the Contract, prior to commencement of construction activities, the Contractor will meet with the Engineer to discuss erosion control requirements and develop a mutual understanding relative to details of erosion control.

B. Related Work Specified Elsewhere:

1. Site work is specified in appropriate sections of this Division.

C. Design Criteria:

1. Conduct all construction in a manner and sequence that causes the least practical disturbance of the physical environment.
2. Stabilize disturbed earth surfaces in the shortest time and employ such temporary erosion control devices, as may be necessary, until such time as adequate soil stabilization has been achieved.

1.2 SUBMITTALS

- A. The Contractor shall furnish the Engineer, in writing, his work plan giving proposed locations for storage of topsoil and excavated material, before beginning construction. A schedule of work shall accompany the work plan. Acceptance of this plan will not relieve the Contractor of his responsibility for completion of the work as specified.

1.3 QUALITY ASSURANCE

- A. Be responsible for the timely installation and maintenance of all sedimentation control devices necessary to prevent the movement of sediment from the construction site to off site areas or into the stream system via surface runoff of underground drainage systems. Measures in addition to those shown on the Drawings necessary to prevent the movement of sediment off site shall be installed, maintained, removed, and cleaned up at the expense of the Contractor. No additional charges to the Owner will be considered.

B. All materials and methods of sedimentation and erosion control shall conform to the requirements outlined in the Connecticut Guidelines for Erosion and Sediment Control as updated and the General Permit for Stormwater and Dewatering Wastewaters from Construction Activities and the Inland Wetlands Commission Permit appended to these Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Crushed stone for sediment filtration devices, access ways and staging areas shall conform to Connecticut DOT Standard Specifications for Highway and Bridges Form 814A.

B. Permanent Seed:

1. Conservation mix appropriate to the predominant soil conditions as specified in the BMP and subject to approval by the Engineer.

C. Temporary Seeding:

1. Use species appropriate for soil conditions and season as specified in the BMP and subject to approval by the Engineer.

D. Water:

1. The Contractor shall provide water and equipment to control dust, as directed by the Engineer.

E. Silt Fence

Silt fence fabric shall be a woven, polypropylene, ultraviolet resistant material such as "ENVIROFENCE" by Mirafi Inc., Charlotte, NC or equal.

F. Sediment Control Device

Sediment control devices shall be used during construction to control sediment discharges into existing drainage systems or other receiving streams. Silt sack shall be used under catch basins and dewatering bags as a stand alone device to catch sediment laden groundwater. They are constructed of permeable geotextile material and contain factory installed hose connections for various size hoses.

G. Straw mulch shall be utilized on all newly graded areas to protect areas against washouts and erosion. Straw mulch shall be comprised of threshed straw of oats, wheat, barley, or rye that is free from noxious weeds, mold or other objectionable material. The straw mulch shall contain at least 50 percent by weight of material to be 10-in or longer. Straw shall be in an air-dry condition and suitable for placement with blower equipment.

2.2 CONSTRUCTION REQUIREMENTS

A. Temporary Erosion Checks:

1. Make a visual inspection of all sedimentation control devices once per week and promptly after every rainstorm. If such inspection reveals that additional measures are needed to prevent movement of sediment to offsite areas, promptly install additional devices as needed. Sediment controls in need of maintenance shall be repaired promptly.

- 2. Baled hay, sand bags or siltation fence may be used in an arrangement to fit local conditions.
- B. Temporary Berms:
 - 1. Temporary barriers shall be constructed along the toe of embankments when necessary to prevent erosion and sedimentation.
- C. Temporary Seeding:

Areas to remain exposed for a time exceeding 3 weeks shall receive temporary seeding as indicated below:

<u>Season</u>	<u>Seed</u>	<u>Rate</u>
Summer (5/15 - 8/15)	Sudangrass	40 lbs/acre
Late Summer/Early Fall (8/15 - 9/15)	Oats	80 lbs/acre
Fall (9/15 - 10/1)	Annual Ryegrass	
Winter (10/1 - 4/1)	Winter Rye	40 lbs/acre
Spring (4/1 - 7/1)	Mulch w/Dormant Seed	112 lbs/acre
	Oats	80 lbs/acre*
	Annual Ryegrass	80 lbs/acre
		40 lbs/acre

* seed rate only

- D. Silt Fence shall be supported by posts and installed per the manufacturer's recommendations.
- E. Mulch All Areas Receiving Seeding:

Use either wood cellulose fiber mulch (750 lbs/acre); or straw mulch with chemical tack (as per manufacturer's specifications). Wetting for small areas may be permitted. Biodegradable netting is recommended in areas to be exposed to drainage flow.
- F. Erosion control matting for slopes and ditches shall be anchored with pegs and/or staples per manufacturer's recommendations. Contractor shall provide matting along the flowline of all ditches and swales having a longitudinal slope in excess of 0.01 ft/ft, and on all slopes in excess of 3(H) to 1(V).

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Temporary Erosion Checks:
 - 1. Temporary erosion checks shall be constructed in ditches and at other locations designated by the Engineer. The Engineer may modify the Contractor's arrangement of silt fences, bales and bags to fit local conditions.
 - 2. Baled hay, silt fences, or sandbags, or some combination, may be used in other areas, as necessary, to inhibit soil erosion.
 - 3. Siltation fence shall be located and installed as shown on plans or as required to comply with all Federal, State and Local Regulations.
- B. Erosion control matting for slopes and ditches shall be installed where indicated on the Drawings and as required to stabilize the soil until permanent vegetative stabilization is established.

C. Maintenance:

Erosion control features shall be installed prior to excavation wherever appropriate. Temporary erosion control features shall remain in place and shall be maintained until a satisfactory growth of grass is established. The Contractor shall be responsible for maintaining erosion control features throughout the life of the construction contract. Maintenance will include periodic inspections by the Owner or Engineer for effectiveness of location, installation and condition with corrective action taken by the Contractor, as appropriate.

D. Removing and Disposing of Materials:

1. When no longer needed, material and devices for temporary erosion control shall be removed and disposed of upon approval by Engineer.
2. When removed, such devices may be reused in other locations, provided they are in good condition and suitable to perform the erosion control for which they are intended.
3. When dispersed over adjacent areas, the material shall be scattered to the extent that it causes no unsightly conditions nor creates future maintenance problems.
4. Sedimentation basins, if no longer required, will be filled in, the pipe removed, the surface loamed and grass cover shall be established.

END OF SECTION

SECTION 02485LOAMING & SEEDINGPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish, place, and test topsoil, seed, lime, and fertilizer where shown on the drawings and protect and maintain seeded areas disturbed by construction work, as directed by the Engineer.
- B. Related Work Specified Elsewhere (When Applicable): Earthwork, excavation, backfill, compaction, site grading and temporary erosion control are specified in the appropriate Sections of this Division.

1.2 SUBMITTALS AND TESTING

A. Seed:

- 1. Furnish the Engineer with duplicate signed copies of a statement from the vendor, certifying that each container of seed delivered to the project site is fully labeled in accordance with the Federal Seed Act and is at least equal to the specification requirements.
- 2. This certification shall appear in, or with, all copies of invoices for the seed.
- 3. The certification shall include the guaranteed percentages of purity, weed content and germination of the seed, and also the net weight and date of shipment. No seed may be sown until the Contractor has submitted the certificates and certificates have been approved.
- 4. Each lot of seed shall be subject to sampling and testing, at the discretion of the Engineer, in accordance with the latest rules and regulations under the Federal Seed Act.

B. Topsoil:

- 1. Inform the Engineer, within 30 days after the award of the Contract, of the sources from which the topsoil is to be furnished.
- 2. Obtain representative soil samples, taken from several locations in the area under consideration for topsoil removal, to the full stripping depth.
- 3. Have soil samples tested by an independent soils testing laboratory, approved by the Engineer, at the Contractor's expense.
- 4. Have soil samples tested for physical properties and pH (or lime requirement), for organic matter, available phosphoric acid, and available potash, in accordance with standard practices of soil testing.
- 5. Approval, by the Engineer, to use topsoil for the work will be dependent upon the results of the soils tests.

C. Lime & Fertilizer:

- 1. Furnish the Engineer with duplicate copies of invoices for all lime and fertilizer used on the project showing the total minimum carbonates and minimum percentages of the material furnished that pass the 90 and 20 mesh sieves and the grade furnished.

2. Each lot of lime and fertilizer shall be subject to sampling and testing at the discretion of the Engineer.
3. Sampling and testing shall be in accordance with the official methods of the Association of Official Agricultural Chemists.
4. Upon completion of the project, a final check may be made comparing the total quantities of fertilizer and lime used to the total area seeded. If the minimum rates of application have not been met, the Engineer may require the Contractor to distribute additional quantities of these materials to meet the minimum rates.

1.3 DELIVERY, STORAGE & HANDLING

- A. Seed:
 1. Furnish all seed in sealed standard containers, unless exception is granted in writing by the Engineer.
 2. Containers shall be labeled in accordance with the United States Department of Agriculture's rules and regulations under the Federal Seed Act in effect at the time of purchase.
- B. Fertilizer:
 1. Furnish all fertilizer in unopened original containers.
 2. Containers shall be labeled with the manufacturer's statement of analysis.

1.4 JOB CONDITIONS

- A. Topsoil: Do not place or spread topsoil when the subgrade is frozen, excessively wet or dry, or in any condition otherwise detrimental, in the opinion of the Engineer, to the proposed planting or to proper grading.
- B. Seeding:
 1. Planting Seasons: The recommended seeding time is from April 1 to September 15. The Contractor may seed at other times. Regardless of the time of seeding, the Contractor shall be responsible for each seeded area until it is accepted.
 2. Weather Conditions:
 - a. Do not perform seeding work when weather conditions are such that beneficial results are not likely to be obtained, such as drought, excessive moisture, or high winds.
 - b. Stop the seeding work when, in the opinion of the Engineer, weather conditions are not favorable.
 - c. Resume the work only when, in the opinion of the Engineer, conditions become favorable, or when approved alternate or corrective measures and procedures are placed into effect.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Seed:
 1. Provide the grass seed mixture approved by the Engineer, having the following composition:
 - a. Park Mixture:
50 percent Creeping Red Fesque
30 percent Kentucky Bluegrass

20 percent Annual Ryegrass

b. Roadside Mixture:

- 50 percent Creeping Red Fescue
- 15 percent Kentucky Bluegrass
- 5 percent White Clover
- 2 percent Red Top
- 3 percent Birdsfoot Trefoil
- 25 percent Annual Ryegrass

2. Do not use seed which has become wet, moldy, or otherwise damaged in transit or during storage.

B. Topsoil:

- 1. Fertile, friable, natural topsoil typical of the locality, without admixture of subsoil, refuse or other foreign materials and obtained from a well-drained site. Mixture of sand, silt, and clay particles in equal proportions.
- 2. Free of stumps, roots, heavy of stiff clay, stones larger than 1-inch in diameter, lumps, coarse sand, weeds, sticks, brush or other deleterious matter.
- 3. Not less than 4 percent nor more than 20 percent organic matter.
- 4. Topsoil depth shall be 4-inches, unless otherwise indicated.

C. Lime:

- 1. Provide lime which is ground limestone containing not less than 85% of total carbonate and of such fineness that 90% will pass a No. 20 sieve and 50% will pass a No. 100 sieve.
- 2. Coarser materials will be acceptable provided the specified rates of application are increased proportionately on the basis of quantities passing a No. 100 sieve. No additional payment will be made to the Contractor for the increased quantity.

D. Fertilizer:

- 1. Provide a commercial fertilizer approved by the Engineer.
- 2. Provide fertilizer containing the following minimum percentage of nutrients by weight:
 - 10% Available phosphoric acid
 - 10% Available potash
 - 10% Available nitrogen (75% of the nitrogen shall be organic)

PART 3 - EXECUTION

3.1 PREPARATION

A. Equipment:

- 1. Provide all equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials.
- 2. Demonstrate to the Engineer that the equipment will apply materials at the specified rates.

B. Soil: Perform the following work prior to the application of lime, fertilizer or seed.

- 1. Scarify the subgrade to a depth of 2 inches to allow the bonding of the topsoil with the subsoil.
- 2. Apply topsoil to a depth of 4 inches or as directed on areas to be seeded.

3. Trim and rake the topsoil to true grades free from unsightly variations, humps, ridges or depressions.
4. Remove all objectionable material and form a finely pulverized seed bed.

3.2 PERFORMANCE

- A. Grading:
 1. Grade the areas to be seeded as shown on the Drawings or as directed by the Engineer.
 2. Leave all surfaces in even and properly compacted condition.
 3. Maintain grades on the areas to be seeded in true and even conditions, including any necessary repairs to previously graded areas.
- B. Placing Topsoil:
 1. Uniformly distribute and evenly spread topsoil on the designated areas.
 2. Spread the topsoil in such a manner that planting work can be performed with little additional soil preparation or tillage.
 3. Correct any irregularities in the surface resulting from topsoiling or other operations to prevent the formation of depressions where water may stand.
 4. Thoroughly till the topsoil to a depth of at least 3 inches by plowing, harrowing, or other approved method until the condition of the soil is acceptable to the Engineer. The surface shall be cleared of all debris and or stones one inch or more in diameter.
- C. Placing Fertilizer:
 1. Distribute fertilizer uniformly at a rate determined by the soils test over the areas to be seeded.
 2. Incorporate fertilizer into the soil to a depth of at least 3 inches by discing, harrowing, or other methods acceptable to the Engineer.
 3. The incorporation of fertilizer may be a part of the tillage operation specified above.
 4. Distribution by means of an approved seed drill equipped to sow seed and distribute fertilizer at the same time will be acceptable.
- D. Placing Lime:
 1. Uniformly distribute lime immediately following or simultaneously with the incorporation of fertilizer.
 2. Distribute lime at a rate determined from the pH test, to a depth of at least 3 inches by discing, harrowing, or other methods acceptable to the Engineer.
- E. Seeding:
 1. Fine rake and level out any undulations or irregularities in the surface resulting from tillage, fertilizing, liming or other operations before starting seeding operations.
 2. Hydroseeding:
 - a. Hydroseeding may be performed where approved and with equipment approved by the Engineer.
 - b. Sow the seed over designated areas at a minimum rate of 5 pounds per 1000 square feet.
 - c. Seed and fertilizing materials shall be kept thoroughly agitated in order to maintain a uniform suspension within the tank of the hydroseeder.

- d. The spraying equipment must be designed and operated to distribute seed and fertilizing materials evenly and uniformly on the designated areas at the required rates.
 3. Drill Seeding:
 - a. Drill seeding may be performed with approved equipment having drills not more than 2 inches apart.
 - b. Sow the seed uniformly over the designated areas to a depth of 1/2 inch and at a rate of 5 pounds per 1,000 square feet.
 4. Broadcast Seeding:
 - a. Broadcast seeding may be performed by equipment approved by the Engineer.
 - b. Sow the seed uniformly over the designated areas at a rate of 5 pounds per 1,000 square feet.
 - c. Sow half the seed with the equipment moving in one direction and the remainder of the seed with the equipment moving at right angles to the first sowing.
 - d. Cover the seed to an average depth of 1/2 inch by means of a brush harrow, spike-tooth harrow, chain harrow, cultipacker, or other approved devices.
 - e. Do not perform broadcast seeding work during windy weather.
- F. Compacting:
 1. Seeded areas must be raked lightly after sowing unless seeding is to be directly followed by application of an approved mulch.
 2. Compact the entire area immediately after the seeding operations have been completed.
 3. Compact by means of a cultipacker, roller, or other equipment approved by the Engineer weighing 60 to 90 pounds per linear foot of roller.
 4. If the soil is of such type that a smooth or corrugated roller cannot be operated satisfactorily, use a pneumatic roller (not wobbly wheel) that has tires of sufficient size to obtain complete coverage of the soil.
 5. When using a cultipacker or similar equipment, perform the final rolling at right angles to the prevailing slopes to prevent water erosion, or at right angles to the prevailing wind to prevent dust.

3.3 PROTECTION & MAINTENANCE

- A. Protection:
 1. Protect the seeded area against traffic or other use.
 2. Erect barricades and place warning signs as needed.
- B. Maintenance:
 1. At the time of the first cutting, set mower blades two inches high. All lawns shall receive at least two mowings before acceptance. Coordinate schedule for mowing with Engineer.
 2. Maintenance shall also include all temporary protection fences, barriers and signs and all other work incidental to proper maintenance.
 3. Maintain grass areas until a full stand of grass is indicated, which will be a minimum of 45 days after all seeding work is completed, and shall not necessarily relate to Substantial Completion of the General Contract.

4. Protection and maintenance of grass areas shall consist of watering, weeding, cutting, repair of any erosion and reseeding as necessary to establish a uniform stand for the specified grasses, and shall continue until Acceptance by the Engineer of the work of this section. It shall also include the furnishing and applying of such pesticides as are necessary to keep grass areas free of insects and disease. All pesticides shall be approved by Engineer prior to use.

3.4 ACCEPTANCE

- A. At final acceptance of the project all areas shall have a close stand of grass with no weeds present and no bare spots greater than three inches (3") in diameter over greater than five percent (5%) of the overall seeded area.

END OF SECTION

SECTION 02513

BITUMINOUS CONCRETE PAVING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Furnish all plant, labor, equipment and materials required to install bituminous concrete pavement courses, including walkways and driveways, as shown on the Drawings and as specified herein.
- B. Work Not Included: Removal and replacement of paving for the convenience of the Contractor will not be considered for payment.
- C. Related Work Specified Elsewhere (When Applicable):
 - 1. Excavation, backfill, aggregate base and subbase.

1.2 QUALITY ASSURANCE

- A. Materials: Use only materials furnished by a bulk bituminous concrete producer regularly engaged in the production of hot mixed, hot laid bituminous concrete.
- B. Equipment: Provide, maintain and operate pavers, dump trucks, tandem, 3-wheel and pneumatic tired rollers well suited to the mixtures being placed. Provide, maintain and operate hand equipment as required. When applicable, provide, maintain and operate trimming equipment and materials.
- C. General: All materials shall conform to the requirements of the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges, and Incidental Construction, Form 816, latest edition (hereinafter referred to as CTDOT Specifications) and as specified herein.
- D. The purpose of this specification is to direct the Contractor's attention to certain paving items. Compliance with this specification does not relieve the Contractor of his obligation to perform his work in complete accordance with the Connecticut Department of Transportation's requirements.

1.3 SUBMITTALS

- A. A certificate of compliance shall be furnished to the Engineer that the materials supplied comply with the specification requirements.
- B. Delivery slips shall be furnished with each load of mix delivered to the project. Information shall include:
 - 1. Vehicle identification.
 - 2. Date.
 - 3. Project.
 - 4. Identification of material.
 - 5. Gross, tare and net weights.
 - 6. Signed by the bituminous concrete producer.
 - 7. Stamped by a licensed public weighmaster.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Hot Bituminous Paving Mix - Roads, Parking Lots, Walkways and Driveways
 - 1. Temporary pavement shall consist of bituminous concrete paving, Class 1, conforming to CTDOT specification requirements. Refer to the Drawings for additional information.
 - 2. Permanent pavement shall consist of binder (base) and wearing (top) courses (Class 1 and Class 2) for bituminous concrete paving, conforming to CTDOT specification requirements. Refer to the Drawings for additional information.
 - 3. Tack coat shall consist of emulsified asphalt conforming to CTDOT specification requirements.
 - 4. Pavement marking paint shall be fast drying type conforming to CTDOT to specification requirements.

PART 3 - EXECUTION

3.1 GENERAL

- A. Grade Control:
 - 1. The Contractor shall establish and maintain the required lines and grades, including crown and cross-slope, for each course during construction operations.
- B. Reset all existing manholes and gate boxes, to finished grade as required at no additional cost to the Owner.

3.2 PAVEMENT REMOVAL

- A. General:
 - 1. Exercise extreme care in the removal of pavement so that pavement will not be unnecessarily disturbed or destroyed.
 - 2. Mechanically cut pavement to be removed to a straight line, unless otherwise directed by the Engineer.
 - 3. All pavement removed shall become the property of the Contractor and disposed of at acceptable locations.
- B. Connecticut DOT Areas:
 - 1. When removing pavement under the jurisdiction of the Connecticut DOT, strictly adhere to all CTDOT regulations controlling pavement openings.

3.3 SURFACE PREPARATION

- A. Tack coats shall conform to the CTDOT Specifications.
- B. Tack Coat:
 - 1. Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into asphalt concrete pavement. Distribute at rate of 0.05 to 0.15 gallons per square yard of surface.

3.4 PLACING THE MIX

- A. General:

1. Place asphalt concrete mixture on prepared surface. Minimum allowable temperature for placing is 250°F. Maximum shall be 32°5F. Place in areas inaccessible to paving machine and small areas by hand. Place each course to required grade, cross-slope and compacted thickness.
2. Asphalt concrete shall only be placed when the base temperature is above 40°F for a minimum placement of 1½" or more of pavement or above 50°F for a minimum placement of less than 1½" of pavement.

B. Protection:

1. After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened to the extent that the pavement will not be damaged.

END OF SECTION

SECTION 02568PRESSURE TESTING AND CHEMICAL GROUTING
OF SANITARY SEWER PIPE JOINTSPART 1 - GENERAL1.1 SCOPE OF WORK

- A. The work covered by this Section of the Specifications consists of furnishing all labor, supervision, equipment, appliances and materials and performing all operations in connection with pressure testing and joint sealing, by chemical grouting, of sanitary sewer mains and building laterals, and as directed by the ENGINEER, complete in place and accepted, in accordance with the Drawings and Specifications.
- B. The work and materials required in this Section of the Specifications generally consists of the following:
 - 1. Sewer mains to be pressure tested and sealed shall be televised before and after sealing with results kept in a logbook. It is assumed that each building lateral designated for testing and sealing shall be tested and sealed from the main to approximately five (5) feet up the lateral, including the lateral connection point to the main.
 - 2. A notification form should be given to each building for which laterals have been grouted. This notification to the occupant should state that the lateral servicing the particular address was grouted on the particular date and if blockage occurs, the occupant should call a given phone number of the CONTRACTOR.
 - 3. Sewer flow control to maintain flows in the sewer system allowing the specified work to be performed in a manner acceptable to the Engineer.
 - 4. Following the testing and grouting of sewer main joints, the Contractor shall clean and dispose of all debris in manholes prior to visual inspection by the Engineer.
- C. Sewer joints shall be pressure tested and grouted where indicated on the table in Appendix B: Pipeline Rehabilitation Table of these Specifications and where directed by the Engineer.
- D. Refer to Appendix C: Pipeline Inspection Reports, for observed defect information. Please review videos for defects not included in logs.

1.2 RELATED SECTIONS

A. Sewer Flow Control	Section 02751
B. Sewer Line Cleaning	Section 02752
C. Television Inspection of Sewers	Section 02753

1.3 SUBMITTALS

- A. Shop drawings, a list of materials, and technical data shall be submitted to the OWNER for approval prior to any work being performed under this Section of the Specifications.

1.4 DESIGN CRITERIA

- A. The CONTRACTOR shall provide CCTV testing-grouting rigs plus all necessary

support equipment and personnel for full-time operation.

B. The CONTRACTOR shall provide an experienced Chief Operator for each of the CCTV testing-grouting rigs. The Chief Operator shall have a minimum of six (6) months active experience as Chief Operator of similar CCTV testing-grouting rigs.

PART 2 - PRODUCTS

2.1 SEWER CLEANING AND TELEVISION INSPECTION EQUIPMENT

A. Cleaning and Television Inspection Equipment used in performing pressure testing and joint sealing shall be as designated in Sections 02752 Sewer Line Cleaning, and 02753 Television Inspection of Sewers.

2.2 PRESSURE TESTING EQUIPMENT

A. The basic equipment used shall consist of a television camera, joint testing device (such as a low void packer), and test monitoring equipment. The equipment shall be constructed in such a way as to provide means for introducing a test medium, under pressure, into the VOID area created by the expanded ends of the joint-testing device and a means for continuously measuring the actual static pressure of the test medium within the VOID area. A fluid (liquid or gas) shall be used as the test medium. Both liquid (usually water) and air are acceptable, but the test procedure is different for each.

B. VOID pressure data shall be transmitted electrically and without the use of the test medium (water) or hoses. All test monitoring shall be above ground and in a location that allows for simultaneous, continued observation of the television monitor and test monitoring equipment by the OWNER'S representative.

C. The CONTRACTOR shall supply a test cell in order to ensure accuracy of the testing equipment.

2.3 JOINT SEALING EQUIPMENT

A. The basic equipment shall consist of a closed circuit television system, necessary chemical sealant containers, pumps, regulators, valves, hoses, etc., and LOW VOID joint sealing packers for the various sizes of sewer pipes. The packer shall be a cylindrical case of a size less than pipe size, with the cables at either end used to pull it through the line. The packer device shall be constructed in such a manner as to allow a restricted amount of sewage to flow at all times. Generally, the equipment shall be capable of performing the specified operations in lines where flows do not exceed the normal maximum line flows. When the packer is inflated, two (2) wide spaced annular bladders shall be formed, each having an elongated shape and producing an annular void around the center portion of the packer. The packer shall be equipped with a lateral sealing inversion tube for testing and sealing of the building lateral.

2.4 JOINT SEALING MATERIALS

A. Chemical Grout Sealant

1. The chemical grouting material shall be a liquid that can be easily transported to the pipe joint and injected into the joint. The grout shall react quickly to seal the joint against infiltrating groundwater and shall be capable of withstanding the

environment within the sewer or drain system and normal maintenance operations. The chemical grout shall provide a seal that will withstand a water or air pressure test of four pounds per square inch (4 psi) above the hydrostatic pressure for a minimum of thirty (30) seconds.

2. The CONTRACTOR shall use an appropriate root inhibitor mixed with the grout as recommended by the manufacturer; such as Barrier 50W as manufactured by Avanti International, or approved equal.
3. The seal effectiveness of the grout may not be required to be demonstrated by laboratory testing in a soil box on standard pipe of various configurations, if acceptable testing documentation is supplied to and approved by the OWNER. Otherwise, the test will be an exfiltration test performed at a ten (10) foot head of water on a single joint, grout with a standard packing device. Under the following criteria, the test results must meet the specification relating to an acceptable seal for a new pipe.
 - a. Soil Box - A box of such dimensions as to contain a standard 8-inch concrete joint (bell and spigot area) and approximately one yard of soil. One end must allow protrusion of the pipe so that the standpipe can be affixed. The bell end of pipe must be strapped securely to the box and the box designed with a sliding panel so that the spigot end can be flexed.
 - b. Pipe Failure Configuration - The following configurations used in the Western Report (Improved Sealants for Infiltration Control, The Western Company, June, 1969) shall each be tested.
 - 1) Open Joint - $\frac{1}{8}$ " open gap from dead tight joint.
 - 2) Broken Bell - Approximately 1/3 of the bell is broken away.
 - 3) Slot - 3" x $\frac{1}{8}$ " slot in barrel of pipe.
 - c. Flexure Test - The open joint configuration shall be subjected to a deflection of at least 0.3 inch per foot of pipe without causing failure of the seal. (This corresponds to 20% of the possible deflection before breakage of the bell.).
 - d. Soils - All tests will be performed in two soils:
 - 1) Sand (particle size greater than 0.05mm)
 - 2) Clay (at least 30% of soil with particle size less than 0.02 mm)
 - e. In lieu of laboratory tests, the grout manufacturer may submit other proof that the sealant used meets the above requirements.
 - f. The grouting material shall be an acrylamide gel, AV-100 as manufactured by Avanti International, urethane gel 5610 as manufactured by 3-M or an approved equal. The CONTRACTOR shall receive the ENGINEER's approval prior to using any grouting material.
- B. All chemical sealing materials used in the performance of the work specified must conform to the following minimum performance standards:
 1. While being injected, the chemical grout must be able to react in moving water.
 2. The final cured grout must be capable of withstanding submergence in water without degradation.
 3. The resultant grout formation must be impervious to water penetration.
 4. The grout material, after fully curing, must be flexible, not brittle or rigid.
 5. The final grout should be able to withstand freeze-thaw and wet-dry cycles without causing adverse changes to the grout.

6. The final grout formation must not be biodegradable.
7. The cured grout should be chemically stable and resistant to concentrations of acids, alkalis, and organics found in normal sewage.
8. The chemical grout sealing effectiveness shall meet or exceed that stated in "Chemical Sealants for Elimination of I/I", page 23, published by the U.S.E.P.A., September 28, 1973.

C. All chemical sealing materials used shall meet the following minimum application requirements.

1. All component materials should be easily transportable by common carriers.
2. Packaging of component materials should be compatible with field storage requirements.
3. Grout components must be packaged in such a fashion as to provide for maximum worker safety when handling the materials and minimize spillage when preparing for use.
4. Mixing of the components should be compatible with field applications and not require precise measurements.
5. Catalyzation shall take place at the point of injection/repair.
6. Cleanup must be done without inordinate use of flammable or hazardous chemicals.
7. Materials must be capable of being pumped through a minimum of 500 feet of $\frac{1}{2}$ inch to $\frac{3}{4}$ inch diameter hose.
8. Residual sealing materials must be removable from the sewer after injection to ensure no flow reduction, restriction or blockage of normal sewer flows.

D. Acrylamide Base Gel sealing materials shall have the following basic properties:

1. A controllable reaction time ranging from ten (10) seconds to greater than one (1) hour.
2. Viscosity that can be made near two (2) centipoise or greater.
3. Viscosity to remain constant throughout the induction period.
4. The ability to tolerate some dilution and react in moving water.
5. The final reaction shall produce a homogeneous chemically stable, non-biodegradable, firm, flexible gel.
6. The gel shall not be rigid or brittle.
7. The gel shall have a negligible corrosion rate on mild steel plates.
8. The base compounds may be varied considerably by additives to increase the strength, adhesion, solution density and viscosity.
9. The gel shall be prepared from a minimum of ten percent (10%) (by weight) aqueous solution of the basic chemicals. The activator and initiator catalysts shall be introduced in such proportions, as recommended by the manufacturer, as to produce the most effective gel time for the existing field conditions and temperatures.
10. Proportion control tests shall be made daily to determine that the proper amount of catalysts and additives are being used for the prevailing conditions. The concentration of the initiator (ammonium persulfate) shall be less than three percent (3%) by weight.

E. Urethane Base Gel sealing materials shall have the following basic properties:

1. 1 Part urethane prepolymer thoroughly mixed with between 5 and 10 parts of

water weight. The recommended mix ratio is 1 part urethane prepolymer to 8 parts of water (11% prepolymer).

2. 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.
3. A liquid prepolymer having a viscosity of 600 to 1200 centipoise at 70°F than can be pumped through 500 feet of ½-inch hose with a 1000 psi head at a flow rate of 1 ounce per second.
4. The water used to react the prepolymer should have a pH of 5 to 9.
5. 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.
6. A cure time that can be reduced to 10 seconds for water temperatures of 40°F to 80°F when 1 part prepolymer is reacted with 8 parts of water containing a sufficient amount of gel control agent additive.
7. A relatively rapid viscosity increase of the prepolymer/water mix. Viscosity increases from about 10 to 60 centipoise in the first minute for 1 to 8 prepolymer ratio at 50°F.
8. A reaction (curing) which produces a chemically stable and non-biodegradable, tough, flexible gel.
9. The ability to increase mix viscosity, density, gel strength and resistance to shrinkage by the use of additives to the water.

F. None of the materials in the grouting system shall present undue hazard to job site personnel, the general public, or the environment. Material Safety Data Sheets (Form OSHA-20 or equivalent) shall be made available for each material outlining proper fire and explosion hazard data, health hazard data, spill and leak procedures, and special protective equipment information.

G. Proper procedures for waste disposal of all residues of each material in the grouting system shall be used. Manufacturers' recommendations shall be strictly adhered to. Disposal shall be made at a sanitary landfill site or other applicable disposal site. Neither the grout nor its component materials shall be disposed of in the sewer drain system.

H. All equipment and the surrounding area shall be cleaned up properly and completely. The method of cleaning equipment shall be based on the manufacturer's recommendations.

I. The chemical sealing materials used shall have a minimum of five (5) years documented "in place" successful use in the sealing of sewer line joints. At the request of the ENGINEER, proof of such documentation will be provided by the CONTRACTOR. If such documentation is inadequate or unsatisfactory to the OWNER, the material shall not be allowed for use on this project unless verified by the soil box test and approved by the ENGINEER.

J. An additive to increase the compressive and tensile strength as well as elongative properties shall be added to the grout mix. If an acrylamide gel is used then AV-257 as manufactured by Avanti International is acceptable or if a urethane gel is used an acceptable additive is 5612 as manufactured by 3-M. Mixing ratios shall be a minimum of 4 gallons in lieu of water per 30 gallon mix if acrylamide and 4 gallons in lieu of water per 40 gallon mix if urethane. The grout shall be mixed as defined by the Manufacturer.

PART 3 – EXECUTION

3.1 CLEANING AND TELEVISION INSPECTION OF SEWERS

- A. All lines that are scheduled for grouting shall be cleaned. Cleaning shall include the complete removal and disposal of all dirt, rocks, roots, gravel and other debris and obstructions from the sewers. Cleaning and Television Inspection shall be performed in accordance with Sections 02752 Sewer Line Cleaning, and 02753 Television Inspection of Sewers.

3.2 PRESSURE TESTING

- A. The technique of sewer line joint testing is used to test the integrity of individual pipe joints. Testing cannot be performed and will not be required on cracked or broken pipe, or sections of the pipe between joints. Testing also will not be required on visibly leaking joints. Test all joints except those with visible infiltration. Joints with visible infiltration shall be sealed immediately.
- B. Procedure:
 1. Position the packer on each joint to be tested.
 2. Inflate the sleeves on each end of the packer.
 3. Apply four (4.0) psi pressure above the existing hydrostatic pressure on the outside of the joint to the void area created around the inside perimeter of the joint.
 4. Shut off the supply of air once the pressure has stabilized at the required amount.
 5. Monitor the void pressure for thirty (30) seconds.
 6. Repair the joint if the pressure drops more than one half (1/2) psi in the thirty (30) seconds.
- C. Water or chemical pressure testing may be used in lieu of air testing subject to review and approval by the Engineer.

3.3 JOINT SEALING

- A. Joints showing visible leakage, or joints that have failed the joint test, shall be sealed as specified. Joint sealing shall be accomplished by forcing chemical sealing materials into or through infiltration points by a system of pumps, hoses, and sealing packers. The amount of grout necessary for each joint shall conform to manufacturer's recommendations and to further requirements of this Section.
- B. The packer shall be positioned over the area of infiltration by means of a metering device and the closed circuit television camera in the line. It is important that the procedure used by the CONTRACTOR for positioning the packer be accurate to avoid over pulling the packer and thus not effectively sealing/grouting the intended joint from infiltration.
- C. The packer sleeves shall then be expanded using precisely controlled pressures. The pneumatically expanded sleeve or elements shall seal against the inside periphery of the pipe to form a void area at the point infiltration, now completely isolated from the remainder of the pipeline.

- D. Into this isolated area, sealant materials shall be pumped through the hose system at controlled pressures that are in excess of groundwater pressures.
- E. The pumping, metering, and packer device shall be integrated so that proportions and quantities of materials can be regulated in accordance with the type and size of the leak being sealed.
- F. Sewer main and lateral sealing is performed if video inspection shows visible leakage; however the OWNER reserves the right to seal additional sewer joints as it sees fit. Final field determination of joint sealing will be made by the ENGINEER. The packer should remain in position, maintaining the isolated VOID. Chemical grout sealant is pressure injected through the packer into the annular space between the inversion tube and the sewer pipe. Under pressure, the grout material is then forced out into the soil through leaking joints and pipe defects. It is assumed that each building lateral designated for testing and sealing shall be tested and sealed from the main to approximately five (5) feet up the lateral.

3.4 **JOINT SEALING VERIFICATION**

- A. Joint sealing verification is completed by performing air testing a second time. The air test is the same as defined above. The sequence of air testing, grouting and subsequent air testing is repeated until either the joint is sealed or it is determined that the grout consumption is too high and may result in the blockage of the pipe. The final determination to stop subsequent attempts to seal a joint will be made by the ENGINEER.

3.5 **RESIDUAL GROUT MATERIAL**

- A. Any residual sealing materials that extend into the pipe, reducing the pipe diameter, or restrict the flow shall be removed from the joint. The sealed joints shall be left reasonably "flush" in dimension with the existing pipe surface. If excess residual sealing materials accumulate in the line and/or as directed by the ENGINEER, the entire line section shall be re-cleaned to remove excess material, at no expense to the OWNER. In the case where lateral sealing has taken place, the CONTRACTOR shall take precautions not to inject excess material; shall notify the homeowner by written notice that the lateral has been grouted, and shall be responsible to clean laterals where blockage occurs due to excess grout material.

3.6 **RECORDS**

- A. Documentation of television inspection results shall be as follows:
 1. Television Inspection Logs: Printed location records shall be kept by the CONTRACTOR and will clearly show the location, in relation to adjacent manholes, of each infiltration point discovered by the television camera. In addition, other points of significance such as locations of building sewer, unusual conditions, roots, storm sewer connections, collapsed sections, presence of scale and corrosion and other discernible features will be recorded and a copy of such records will be supplied to the OWNER.
 2. Photographs: Standard size photographs of the television monitor or problem areas shall be taken by the CONTRACTOR upon request of the ENGINEER and at no cost to the OWNER.
 3. DVD Recordings: The purpose of recordings shall be to supply a visual and audio

record of problem areas of the lines that may be replayed both daily and at future presentations. Video recording playback shall be at the same speed that it was recorded. Slow motion or stop motion playback features shall be supplied at the option of the OWNER. DVD's shall remain available to the OWNER along with a viewing machine, for a period of up to thirty days following completion of all work by the CONTRACTOR. All DVDs (and any other recordings) shall become the property of the OWNER. All DVDs shall be compatible with DVD equipment.

- B. During the joint testing program, complete records shall be kept, recording the location of the line section in which the testing is being done, the location of each joint tested, the test pressures used, flow rates of the test liquid and the test results. A specific statement shall be included to indicate if the referenced joint passed or failed the test and if the joint is to be sealed.
- C. Complete records shall be kept of all joint sealing performed in each line section certified and submitted to the ENGINEER. The records will document the location of the line section in which the sealing was done, the location of each joint sealed, the amount of material used to seal the joint the numbers of injections required to seal the joint and the joint test verification results. Two copies of the certified test results shall be submitted to the ENGINEER for review and approval.
- D. The complete procedure for sealing sewer mains and laterals should be videotaped during the air testing and sealing operation. The DVDs are to be submitted to the ENGINEER for review and permanent record.

3.7 INSPECTION

- A. Work shall only be performed in the presence of a duly authorized representative of the ENGINEER. This includes blending the various chemicals (set-up and tear down operations need not be performed in the presence of the ENGINEER).
- B. The ENGINEER may direct the CONTRACTOR to alter testing pressure gel time, and/or pumping rate, based on actual conditions encountered during sealing.
- C. The ENGINEER may direct the operator to position the air-inflatable sleeves along a clean barrel of pipe to verify that the unit is holding pressure. Similarly, the ENGINEER may direct the operator to position the air-inflatable sleeves on either side of a house connection to determine that air leakage is being properly recorded.
- D. The ENGINEER shall determine which joints pass and fail the pressure test based on compliance with these specifications. A daily log of work accomplished shall be duly recorded and acknowledged by the ENGINEER and the CONTRACTOR'S superintendent.
- E. Video Inspection of each sewer main and lateral grouted will be required immediately following the process to determine cleanliness before moving on to the next location.

3.8 WARRANTY

- A. All sewer pipe joint sealing work performed shall be guaranteed against faulty workmanship and/or materials for a period of one year after the completion of work.
- B. Prior to the expiration of the guarantee period, the OWNER reserves the right to select an initial retest area consisting of specific sealed sewer mains and laterals. The sewer mains and laterals to be retested shall be randomly selected throughout the project area and shall be representative of the majority of the sealing work originally performed.

- C. Within the initial retest area, the CONTRACTOR shall retest all previously sealed sewer mains and laterals as previously specified. Any joints failing the retest shall be resealed. If the failure rate of the retested sewer mains and laterals is less than 5% of the sewer mains and laterals retested, the work shall be considered satisfactory and no further retesting will be required.
- D. If, in the initial retest area, the failure rate of the retested sewer mains and laterals exceeds 5% of the sewer mains and laterals retested, an additional retest area of equivalent size shall be selected and all previously sealed sewer mains and laterals shall be retested. This additional retesting and resealing, if necessary, will continue until a failure rate of less than 5% of the total sewer mains and laterals retested is met. If a sewer main fails the initial retest, no additional payment shall be made for resealing the failed joints.
- E. Any additional testing/sealing required beyond the initial retest area shall be accomplished at no cost to the OWNER. The initial retesting shall be considered as being included for payment under the appropriate pipe size unit bid item for pressure testing and sealing.
- F. Should as much as 25% of the original project be retested and fail to meet the 5% requirement, the CONTRACTOR will be required to provide the same number of crews as utilized in the original project so that the retesting will proceed at a more rapid rate.

3.9

LINE OBSTRUCTIONS

- A. It shall be the responsibility of the CONTRACTOR to clear the line of all obstructions such as solids, dropped joints, collapsed pipe that will prevent the line from being grouted. As a general guide, if the camera or grouting equipment cannot pass by the obstruction as determined by the ENGINEER then the obstruction should be considered for repair or removal.
- B. If inspection reveals an obstruction that cannot be removed by conventional sewer cleaning equipment, or an internal cutter to remove such things like protruding services, then the sewer main shall not be sealed and the ENGINEER shall be notified of the recommended repair.

END OF SECTION

SECTION 02601MANHOLES, COVERS AND FRAMESPART 1 - GENERAL**1.1 DESCRIPTION**

- A. Work Included: Construct manholes, covers, frames, brick masonry, inverts and apply waterproofing in conformance with the dimensions, elevations, and locations shown on the Drawings and as specified herein.
- B. Related Work Specified Elsewhere (when applicable):
 - 1. Final sewer testing is specified in this Division.
 - 2. Pipe, excavation, backfill, paving and dewatering are specified in the appropriate Sections in this Division
 - 3. Refer to Appendix A: Manhole Reports for observed defect information.
 - 4. For manhole Frames and Covers to be rehabilitated, refer to 02758 Manhole Rehabilitation.

1.2 QUALITY ASSURANCE

- A. Frames and Covers:
 - 1. Acceptable Manufacturers:
 - a. EJ Castings
 - b. LeBaron Foundry Company.
 - c. Or equivalent.
- B. Masonry:
 - 1. Brick: Shall comply with the ASTM Standard Specifications for Sewer Brick (made from clay or shale), Designation C32, for Grade SS, hard brick.
 - 2. Cement: ASTM C-150.
 - 3. Hydrated Lime: ASTM C-207
 - 4. Sand: ASTM C144

1.3 SUBMITTALS TO THE ARCHITECT/ENGINEER

- A. Submit shop drawings and manufacturer's literature in conformance with Section 01340 and the Standard General Conditions of the Construction Contract.

PART 2 - PRODUCTS**2.1 FRAMES AND COVERS**

- A. Standard Units:
 - 1. Made of cast iron conforming to ASTM A48-76, Class 30 minimum.
 - 2. Have machined bearing surfaces to prevent rocking.
 - 3. Castings shall be smooth with no sharp edges.
 - 4. Constructed to support an HS-20 wheel loading.
 - 5. Dimensions and Style shall conform to the Drawings, Standard castings differing in non-essential details are subject to approval by the Engineer:
 - a. Covers -solid with sewer in 3-inch letters diamond pattern.
 - b. Frame - 24-inch diameter clear opening, with flange bracing ribs.

6. Minimum weight of frame and cover shall be 370 lbs.

B. Water Tight Units:

1. Same features as above for Standard Units, with 22-inch diameter minimum clear opening.
2. Sealing features:
 - a. Inner lid held by a bronze tightening bolt in a locking bar.
 - b. Neoprene gasket
 - c. Water tight pick hole.
3. Minimum weight of frame and cover shall be 510 lbs.

2.2 MASONRY

A. Brick:

1. Sound, hard, uniformly burned, regular and uniform in shape and size, compact texture, and satisfactory to the Engineer.
2. Immediately remove rejected brick from the work.

B. Mortar:

1. Composition (by volume):
 - a. 1 part portland cement.
 - b. 1/2 part hydrated lime.
 - c. 4-1/2 parts sand.
2. The proportion of cement to lime may vary from 1:1/4 for hard brick to 1:3/4 for softer brick, but in no case shall the volume of sand exceed 3 times the sum of the volume of cement and lime.

C. Cement shall be Type II portland cement.

D. Hydrated lime shall be Type S.

E. Sand:

1. Shall consist of inert natural sand.
2. Grading:

<u>Sieve</u>	<u>Percent Passing</u>
No. 4	100
No. 8	95-100
No. 16	70-100
No. 30	40-75
No. 50	10-35
No. 100	2-15
No. 200	0-5

PART 3 - EXECUTION

3.1 PERFORMANCE

A. Remove existing frame and cover. Contractor shall utilize a circular drill bit to provide sawcut in a circular pattern around the manhole frame and cover. See Section 02578 "Manhole Rehabilitation" of these Specifications for additional requirements regarding replacing existing frames and covers and adjusting to grade existing frames and covers.

B. Adjust to Grade:

1. Adjust tops of manholes to grade with brick masonry.
2. Concrete rings are not acceptable for adjusting to grade.

C. Masonry:

1. Laying Brick:
 - a. Use only clean bricks in brickwork for manholes.
 - b. Moisten the brick by suitable means until they are neither so dry as to absorb water from the mortar nor so wet as to be slippery when laid.
 - c. Lay each brick in a full bed and joint of mortar without requiring subsequent grouting, flushing, or filling, and thoroughly bond as directed.
 - d. Construct all joints in a neat workmanlike manner. Construct the brick surfaces inside the manholes so they are smooth with no mortar extending beyond the bricks and no voids in the joints. Maximum mortar joints shall be 1/2 inch.
 - e. Outside faces of brick masonry shall be plastered with mortar from 1/4-inch to 3/8-inch thick.
 - f. Completed brickwork shall be watertight.
2. Curing:
 - a. Protect brick masonry from drying too rapidly by using burlaps which are kept moist, or by other approved means.
 - b. Protect brick masonry from the weather and frost as required.

D. Frames and Covers:

1. Set all frames in a full bed of mortar, true to grade and concentric with the manhole opening.
2. Completely fill all voids beneath the bottom flange to make a watertight fit.
3. Place a ring of mortar at least one inch thick around the outside of the bottom flange, extending to the outer edge of the manhole all around its circumference.
4. Clean the frame seats before setting the covers in place.

E. Plugging and Patching:

1. Fill all exterior cavities with non-shrink grout and with bituminous waterproofing once the concrete and mortar has set.
2. Touch up damaged water proofing.

F. Cleaning:

1. Thoroughly clean manholes, steps, frames and covers of all debris and foreign matter.

END OF SECTION

SECTION 02751SEWER FLOW CONTROLPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: During the rehabilitation of manholes and sewer pipelines the Contractor shall control flows in sewer lines at all times. The manholes and sewer pipelines that may require sewer flow control include, but may not be limited to, manholes indicated for sealing and/or lining of the bench and channel, and sewer pipeline runs requiring various types of internal rehabilitation. During sewer line joint testing the contractor shall control flows in sewer lines when they exceed 1/4 of the pipe diameter or when inspection of the complete periphery of the pipe is necessary to effectively conduct inspection operations.
- B. Related Work Specified Elsewhere:
 1. Manhole rehabilitation is specified in the appropriate sections in this Division.
 2. Sewer pipeline rehabilitation and appurtenant work is specified in the appropriate sections of this Division.

1.2 PERFORMANCE

- A. Plugging or Blocking:
 1. Insert plug at a manhole upstream of the manhole or sewer pipeline to be rehabilitated.
 2. Plug shall be so designed that all or any portion of the sewage flows can be released.
 3. Flows shall be shut off or substantially reduced during manhole and sewer pipeline rehabilitation.
- B. Pumping and Bypassing:
 1. When required, supply the necessary pumps, conduits and other equipment (including standby equipment) to divert the flow of sewage around the manhole or sewer pipeline in which work is being performed.
 2. Furnish the necessary labor and 24-hour supervision to set up and operate the pumping and bypassing system.
 3. When required on a 24-hour basis, all engines shall be equipped with silencers.

END OF SECTION

SECTION 02752SEWER LINE CLEANINGPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Provide all equipment necessary for the proper cleaning of the sewers prior to closed circuit television inspection, pressure testing and grouting sewer main joints, and sewer pipe lining.
- B. Sewer flow control to maintain flows in the sewer system allowing the specified work to be performed in a manner acceptable to the Engineer.

1.2 RELATED SECTIONS

- A. Pressure Testing and Chemical Grouting of Sanitary Sewer Pipe Joints - Section 02568
- B. Sewer Flow Control - Section 02751
- B. Television Inspection of Sewers - Section 02753
- C. Sewer Pipe Lining - Section 02756

PART 2 - PRODUCTS2.1 MATERIALS

- A. High Velocity Hydro-Cleaning Equipment shall:
 - 1. Have a minimum of 400 feet of high pressure hose.
 - 2. Have multiple high velocity nozzles, as follows:
 - a. Standard 35 degree nozzle with multiple rear jets and one front jet.
 - b. Sand nozzle capable of transporting sand and gravel to the downstream manhole; and
 - c. Rotating nozzle for removal of grease and scale.
 - 3. Include a high velocity gun for washing and scouring manhole walls and floor.
 - 4. Be capable of producing flows from a fine spray to a long distance solid stream.
 - 5. Include a water tank, auxiliary engines and pumps, and a hydraulically driven hose reel.
 - 6. Have equipment operating controls located above ground.

PART 3 - EXECUTION3.1 PERFORMANCE

- A. Select cleaning equipment based on the conditions of the lines at the time the work commences.
 - 1. Light cleaning (small amounts of debris exist within the sewer line): Use high pressure water jetting equipment, brushes and swabs.
 - 2. Heavy cleaning (large deposits of debris or heavy root growth exist within the sewer line): Use high pressure water jetting equipment specifically designed for the intended use.
- B. Use selected equipment to remove all dirt, grease, rock and other deleterious materials and obstructions.

- C. Protect existing sewer lines from damage caused by improper use of cleaning equipment.
- D. Take precautions to avoid damage or flooding to public or private property being served by the line being cleaned.
- E. Removal of Materials:
 - 1. Remove all solids and semi-solids at the downstream manhole of the section being cleaned.
 - 2. Passing material from one section of a line to another will not be permitted.
- F. Disposal of Materials: Remove from the site and dispose of all solids or other waste materials recovered during the cleaning operations in an approved manner.

3.2 **FIELD QUALITY CONTROL**

- A. Acceptance of this portion of the work may be made upon completion of subsequent television inspection and shall be to the complete satisfaction of the Engineer.

END OF SECTION

SECTION 02753TELEVISION INSPECTION OF SEWERSPART 1 - GENERAL1.1 DESCRIPTION

- A. Work Included: Furnish all necessary labor, materials, supervision and equipment to satisfactorily inspect gravity sewer lines and sewer service pipes as required by the Contract Documents by means of a closed circuit television (CCTV) system.
- B. Related Work Specified Elsewhere: Sewer line cleaning and sewer flow control are specified in the appropriate sections in this Division.

1.2 QUALITY ASSURANCE

- A. CCTV work shall be completed and delivered per the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP) standards. Operators of CCTV equipment shall be NASSCO PACP certified.

PART 2 - PRODUCTS2.1 MATERIALS AND EQUIPMENT

- A. The cameras shall be designed and constructed for sewer line inspection work. The mechanical design of the lens shall allow it to turn and rotate 360 degrees to provide a close up view of sewer pipe walls and sewer service pipes. The camera shall be designed to maintain proper orientation of the picture while the lens is turning and rotating.
- B. The cameras shall be operative in 100% humidity conditions.
- C. The lighting for the cameras shall be suitable to allow a clear picture of service pipes and the entire periphery of the mainline sewer pipe, such that joints, root intrusions, cracks, offset joints, deposits, etc. can be seen and identified by the Engineer.
- D. The lens focus and rotational capabilities and the light intensity will be remotely controlled from an above ground television "studio".
- E. The cameras shall produce a continuous, full color picture with a quality acceptable to the Engineer.

PART 3 - EXECUTION3.1 PERFORMANCE

- A. Flow Control:
 - 1. A minimum of 75% of the periphery of the sewer line shall be visible at all times.
 - 2. The Engineer may require that the line be plugged so that the entire periphery can be inspected. For details on sewer flow control, see Section 02751.
- B. Operation:
 - 1. Perform inspection of sewer lines after lines have been suitably cleaned.

2. When inspecting newly constructed sewer lines, introduce water into the sewer lines to be tested from the upstream manhole prior to the television inspection, but no more than 24 hours in advance of the inspection.
3. Lines will be suitably isolated from the remainder of the sewer line as required.
4. Move the cameras through the line in either direction at a moderate rate, not to exceed 30 feet per minute, as recommended by NASSCO.
5. The Engineer may require Contractor to pull cameras back to get a second view of a section of the pipe.
6. Use manual winches, power winches, television cable reel powered rewinds, high-pressure hose and reels on jet-cleaning trucks, or a flexible pole, to move the camera through the sewer.
7. If, during the inspection operation, the camera will not pass through the entire pipe section, the Contractor shall set up the equipment so that the inspection can be performed from the opposite manhole on the pipe segment.
8. The screen monitor and winch operators shall be in full communication at all times.
9. Remove all wires, screens, sand bags, etc. used in the television inspection process from the sewers at the completion of inspection of each sewer section.

C. Measurement:

1. Measurement for location of defects, service connections, etc., shall be accurate to two tenths (0.2) of a foot over the length of the section being inspected.

D. Records:

1. Printed records shall be provided, reflecting location of defects, service connections, etc., and shall be recorded per PACP standards and stored to a NASSCO-certified digital reporting software:
 - a. Keep records and supply to the Engineer when the work has been completed.
 - b. Show the exact location in relation to adjacent manholes, of each infiltration point discovered by the television camera.
 - c. Show locations of laterals, unusual conditions, roots, break-in storm sewer connections, collapsed sections, presence of scale and corrosion, and other discernible features.
2. Inventory the houses and apparent empty lots bordering each section of sewer line that is inspected and compare results to the number and location of house services found during the inspection. Log inconsistencies and report them to the Engineer.
3. Video / Photographs:
 - a. Two copies of the video shall be provided in DVD format, downloaded or output from a NASSCO certified software: one copy to the Engineer and one copy to the Owner.
 - b. The video shall be digitally recorded, indexed by pipe section (labeled by manhole number or other means acceptable to Engineer) and allow for printing of still photographs.
 - c. Photographs shall be printed at Engineer's request and shall be identified on the back as follows:

Date _____; Section: MH#_____ to MH#_____
Diameter of Sewer ____; Distance from MH#_____ is _____ LF
Description of item photographed _____

END OF SECTION

SECTION 02756SEWER PIPE LININGPART 1 - GENERAL**1.1 DESCRIPTION**

- A. Work Included: Provide all equipment necessary for the lining of sanitary sewer lines by the cured-in-place-pipe (CIPP) method and the reinstatement of sewer services.
- B. Sewer pipe lining shall occur where indicated on the tables in Appendix B of these Specifications and where directed by the Engineer.
- C. Refer to Appendix C Inspection Reports for observed defect information.
- D. Related Work Specified Elsewhere: Sewer flow control, sewer line cleaning, and television inspection of sewers are specified in this Division.

1.2 QUALITY ASSURANCE

- A. Standards:
 - 1. Cured-in-place-pipe (CIPP) shall meet all the requirements of the following standards:
 - a. ASTM F1216 – Standard Practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin-impregnated tube
 - b. ASTM F1743 – Standard Practice for rehabilitation of existing pipelines and conduits by pulled-in-place installation of cured-in-place thermosetting resin pipe
 - c. ASTM D790 – Standard test methods for flexural properties of unreinforced and reinforced plastics and electrical insulating materials
 - d. ASTM F2454 – Standard Practice for Sealing Lateral Connections and lines from the mainline Sewer Systems by the Lateral Packer Method, Using Chemical Grouting
- B. Acceptable Contractors:
 - 1. Layne Inliner, LLC.
 - 2. Green Mountain Pipeline Services, Inc.
 - 3. Insituform Technologies, Inc.
 - 4. Ted Berry Company, Inc.
 - 5. Or qualified equivalent contractor with a minimum of 5 years' experience in sewer pipe lining and a minimum of 100,000 feet of installed CIPP liner.

1.3 SUBMITTALS

- A. The Contractor shall submit to the Owner and/or Engineer, complete design calculations for the liner that meet the requirements of ASTMs F1216, F1743, or F2019, whichever is applicable for the installation and curing methods to be used. The design shall be based on the following physical conditions of the existing pipe to be rehabilitated:
 - 1. All pipes shall be considered fully deteriorated and no bonding to the existing pipe shall be assumed.
 - 2. All pipes are subjected to a soil load of 120 lbs/cf with an H-20 live traffic load.

3. The water table is assumed to be 3 feet below the ground surface.
4. Pipe lengths are shown on the Plans, and shall be verified by the Contractor during the pre-installation inspection. Depths shall be field verified.
5. The maximum pipe ovality is 2%, unless documented, measured by the Contractor and submitted to the Engineer.
6. The minimum wall thickness for a felt tube CIPP liner is 6 mm.
7. The minimum flexural modulus of elasticity of the cured liner shall be 250,000 psi, with a flexural strength of 4,500 psi, as tested in accordance with ASTM D-790.
8. The calculations shall account for a 50-year design life and include a documented factor of safety.

B. Contractor to submit materials and installation procedures for review by Owner and/or Engineer, including information on resin, tube material including certifications, internal and exterior liner coatings, a pre-liner layer if required, manhole and service sealants, an installation schedule, the manufacturer's recommended curing schedule, means of obtaining and collecting samples for testing, method of monitoring liner temperature during curing, and other quality management programs, plans for by-passing or handling of sewer flows, and traffic control.

C. Contractor shall provide the location of the wet-out facility to manufacturer the liner, and include documentation of its permitting status and QA/QC controls. If requested in writing by the Engineer, the Contractor shall assist the Engineer in setting up an inspection of the wet-out facility in advance of the manufacturing of the liner.

D. Contractor to submit video tapes of pre-installation TV inspection and post-lining TV inspection, and a 1-year warranty inspection as specified in Section 02753.

E. Contractor to submit an outreach plan to the Engineer at least 1 week prior to the commencement of lining activities, this plan shall at minimum include a schedule for 1 week and 24 hour advance notices to residents who will be affected by the pipe lining, samples of notices to be provided to residents, and an odor and noise mitigation plan.

F. Contractor to submit documentation relative to the qualifications, training and experience of the installers.

G. Contractor to supply an equipment listing including redundant tools and spare parts to be on site during the lining work.

H. Contractor to supply information on proposed or potential repair and/or rehabilitation methods in the event of a failed liner installation.

I. Following liner installation, contractor shall supply wet-out logs, curing schedules, including curing pressure and curing temperature measurements, and collected samples for testing.

PART 2 - PRODUCTS

A. Pipe Liner

1. The liner shall be fabricated from materials that are chemically resistant to exposure to domestic sewage and septic tank effluent.
2. The resin, tube and curing methods shall be compatible with each other and the installation method to be used, in accordance with manufacturer's recommendations.
3. Liner shall be sized to provide a tight fit to the host pipe.

4. The interior surface of the liner shall be a relatively light reflective color so that a clear detailed examination with closed circuit television equipment can be made.
5. Where possible, interior and exterior liners shall be provided to mitigate styrene migration. The interior and exterior liners shall be included as part of the pipe design, or removed as part of the installation.
6. Liner thickness calculations are discussed in Part 1 above.
7. Liner material shall meet the requirements of ASTM F1216 and F1743.
8. All Materials shall be stored and handled in accordance with the manufacturer's recommendations and consistent with the type or curing method to be used.

B. Service connection grouting

1. The grout materials and equipment used to seal service connections shall be in accordance with ASTMF2454

PART 3 - EXECUTION

- A. All work shall be done in compliance with all current OSHA safety regulations.
- B. Prior to conducting any work, Contractor shall deliver notices to all residents and/or building owners within the area of the pipe lining. Notice shall indicate when the work will take place and who to call with questions or in the event of an emergency. Notice to be approved by the Owner prior to distribution.
- C. Prior to lining the sewer main, the sewer shall be cleaned in accordance with Section 02752 and inspected with CCTV equipment per Section 02753. Contractor to verify that the conditions of the sewers are acceptable for the methods of liner installation required. Prior to lining of pipe, Contractor shall trim back any protruding pipes/services extending into the pipe. Pipes shall be trimmed back to within $\frac{1}{2}$ -inch of the pipe wall, or as close as possible to avoid damaging the host pipe and also to prevent bulges in the liner to be installed. All debris from cleaning and trimming operations shall be removed from the sewer system and not flushed downstream
- D. Active leaks shall be stopped prior to lining if they could, in the opinion of the Engineer, create pockets of trapped water or heat sinks which could cause improper curing of the liner.
- E. Contractor to control sewer flow and bypass pump per Section 02751.
- F. The Contractor shall install and cure the liner per the method recommended by the liner manufacturer and as submitted in the shop drawing.
- G. Steam curing shall only be allowed for pipe sizes of 18-inch diameter and smaller, unless written permission from the Engineer is granted.
- H. Water used for installation shall be provided by the Contractor. The Contractor shall notify Owner prior to disposal or water into the sewer system.
- I. Following liner installation and curing, leakage testing shall be performed on the liner according to the requirements of ASTM F1216.
- J. After liner installation and curing, Contractor shall cool the liner down to at least 100 degrees Fahrenheit prior to commencing service re-instatement and collection of samples. Liner temperature during curing and cool-down shall be monitored by a thermocouple or temperature monitoring strip and recorded at least at 15 minute intervals.
- K. After liner cool-down, the Contractor shall reinstate the existing service connections, using remote controlled equipment including a television camera meeting the

requirements of Section 02753. The opening created for the service lateral shall be at least 95% of the original opening. After creating the hole in the liner, polish the edges of the hole to remove sharp edges and improve flow conditions from the service pipe into the lined sewer main. Coupons of the lining material removed during service reinstatement shall be collected at the downstream manhole, and shall not be left within the sewer system.

- L. The Contractor shall grout and seal each service connection to prevent leakage between the existing pipe, the existing service connection, and the new liner.
- M. Any connections to the sewer main that are not to be reinstated after liner installation shall be coordinated with the Owner. It is the Contractor's sole responsibility to confirm with the Owner that a connection is to be abandoned and not reinstated to the main. For each connection not reinstated, the Contractor shall obtain a sign-off from the Owner, using the form included at the end of this Section.
- N. Provide a watertight seal at the insertion and termination points. Seal any annular space between the liner and host pipe and provide for smooth merging of flows from other pipelines entering the manhole.
- O. After completion of the work, perform post-installation TV inspection of the completed liner and the restored service connections per the requirements of Section 02753. Any of the following defects that are observed shall be repaired immediately at the expense of the Contractor:
 1. Visible leaks, weeping or pinholes
 2. Fins, bulges, wrinkles or other obstructions of more than 5% of the cross-sectional area that were not identified on the pre-installation TV inspection
 3. soft or uncured sections of the liner
 4. visual discoloration or other visual anomalies.
- P. At a time approaching the end of the one-year warranty period, the Contractor shall clean and CCTV the lined sewers again. During the one-year warranty period, any defects which will affect the integrity or the strength of the liner shall be repaired at the expense of the Contractor.

END OF SECTION

SECTION 02758MANHOLE REHABILITATIONPART 1 - GENERAL1.1 DESCRIPTION

A. Work Included: The work includes the rehabilitation of existing sewer manholes, including but not limited to:

1. the removal of roots, mineral build-up and debris;
2. the replacement of frames and covers;
3. the injection grouting of cracks and leaking joints;
4. the sealing and lining of various manhole components;
5. the installation / application of a seal at the joint of the manhole frame and chimney;

B. The locations of the manholes to be rehabilitated are shown in the drawings. The table below describes the manholes that will be rehabilitated and the types of rehabilitation that will be required:

MH ID Number	Location	Rehabilitation Scope ⁽¹⁾
157	Apple Orchard Ln	Seal Manhole
158	Apple Orchard Ln	Seal Manhole
161A	Fern Cir	Seal Manhole
162	Fern Cir	Seal Manhole
164	Oriole Ln	Seal Manhole
164B	Oriole Ln	Seal Manhole
166	Oriole Ln	Seal Manhole
170	Robinwood Rd	Seal Manhole
176A	Puritan Rd	Seal Manhole
212	Old Dairy Rd	Seal Manhole Line Chimney
272	Wesley Dr	Seal Manhole
427	Twitchgrass Rd	Seal Manhole
428	Twitchgrass Rd	Seal Manhole
446	Tanager Ln	Seal Manhole
447	Timberlane Tr	Seal Manhole Replace Frame and Cover
448	Timberlane Tr	Seal Manhole
449B	Wisteria Dr	Seal Manhole

MH ID Number	Location	Rehabilitation Scope ⁽¹⁾
1149E	Val De Mere ESMT	Seal Manhole
1154	Hardy Ln ESMT	Seal Manhole
1159	Val De Mere ESMT	Seal Manhole
1159A	Val De Mere ESMT	Seal Manhole
1160	Val De Mere ESMT	Seal Manhole
1164	Edgewood Ave ESMT	Seal Manhole Line Chimney
1170	Edgewood Ave ESMT	Seal Manhole Line Chimney
1191	Briarcroft Ave	Line Chimney
1197	Placid St	Seal Manhole
1203	Calhoun Ave	Seal Manhole
1204	Calhoun Ave	Seal Manhole Replace Frame and Cover
1206	Calhoun Ave ESMT	Seal Manhole
1207	Calhoun Ave ESMT	Seal Manhole
1213	John St	Seal Manhole Line Chimney
1219	Harned Pl	Seal Manhole Line Chimney
1223	Elizabeth St	Seal Manhole
1228B	Carmel Ridge	Seal Manhole
1229A	Carmel Ridge	Seal Manhole
1232	Hyde Ter	Seal Manhole
1242	Clifford St	Seal Manhole Line Chimney
1244	Gwendolyn Dr	Seal Manhole
1245	Gwendolyn Dr	Seal Manhole
1246	Placid St	Seal Manhole

Notes:

(1) Refer to Appendix A –Manhole Inspection Reports for defect information, manhole dimensions and depths, and locations to perform sealing (grout injection).

- The intent of the manhole rehabilitation work is to stop infiltration into the manhole (whether or not it was previously observed) and repair structural or operation and maintenance defects identified during previous inspections. This is to prevent future deterioration using various products and procedures and methods either singularly or in combination.
- Related Work Specified Elsewhere:

1. Summary of Work - Section 01010
2. Manholes, Covers and Frames - Section 02601
3. Sewer Flow Control – Section 02751

1.2 DESCRIPTION OF METHODS

- A. Seal manhole (Chemical Grout): Manhole sealing (grouting) involves injection grouting to stop leakage includes surface preparation where required, drilling through the manhole walls, bench or channel at points of current and points showing signs of previous leakage and where directed by the Engineer, injecting grout material into the voids and earthen materials outside the structure; patching of the drill and grouting holes; and other associated work to stop leaks and prevent leakage into the structure. Grouting and patching around leaking pipe connections and other defects with non-shrink grout is also included; and other associated work to stop leaks, including patching of the drill and grouting holes. Seal Manhole includes the pressure washing of the entire manhole and removal and disposal of all roots, deposits and loose debris.
- B. Line Manhole: Cementitious coating (liner) for precast, block or brick manholes includes the pressure washing of manhole and removal of all roots, deposits and loose debris and the lining of the manhole through the spray application and/or centrifugally spincasting a cementitious based liner to the inside of the manhole.
- C. Replacement of manhole frame and cover: Replacement of the manhole frame and cover includes round sawcutting the pavement, removing and disposing of the frame and cover, and installing a new frame and cover to grade including any required chimney adjustments, and restoring the disturbed area to grade by matching the pavement depth, or loaming and seeding.
- D. Adjust (raise or lower) manhole frame and cover: Adjustment to grade of manhole frame and cover includes sawcutting the existing pavement, removing the frame and cover, and reinstalling the frame and cover to grade including any required chimney adjustments, and restoring the disturbed area to grade by matching the existing pavement depth, or loaming and seeding.
- E. Miscellaneous Manhole Cleaning, including pressure washing, debris removal and other necessary work to properly prepare surfaces and manholes for the work to be performed. Protect pipe inlets and outlets to prevent debris from entering the collection system.
- F. Sewer flow control required to control and maintain flows in the sewer system allowing the specified work to be performed in a manner acceptable to the Engineer.
- G. Final Acceptance: After the rehabilitation work has been completed, the manholes shall be visually inspected by the Engineer and tested (as required) in the presence of the Owner and/or Engineer.

1.3 QUALITY ASSURANCE

- A. All work shall be performed in accordance with the National Association of Sewer Service Companies (NASSCO) Specification Guidelines, latest edition. Workmanship shall be first-class in all respects.
- B. Contractor's personnel involved in the installation of material shall be certified by the manufacturer that they have successfully completed training in handling, applying and finishing the materials being used.

C. The Contractor shall inspect pre-rehabilitation work, surface preparation, rehabilitation operations, and post-rehabilitation work.

1.4 **SUBMITTALS TO THE ENGINEER**

- A. Submit shop drawings in accordance with the General Conditions of the Contract Documents and Section 01340 - Submittals.
- B. Submit all catalog data sheets, ASTM references, material composition, component physical properties and chemical resistance for all materials as applicable.
- C. Submit detailed descriptions of the recommended procedures for handling and storing materials including a proposed method for monitoring temperatures of the storage location.
- D. Submit a detailed description of all required field testing processes and procedures as applicable from the manufacturer.
- E. Submit a certified statement from the manufacturer that the contractor / installer is an approved installer and tester of the rehabilitation product with certificates of completed training for each crew member involved in each rehabilitation component.
- F. Submit manufacturer's "Certification of Conformance" that lining materials meet or exceed the requirements of these Specifications.
- G. Submit other documents as specified in the appropriate Sections of this Division.
- H. Submit a minimum of five recent verifiable references for similar project work in the United States indicating the successful application of the manhole rehabilitation as specified herein or to be furnished by the Contractor and applied in a similar project environment as included in these contract specifications.
- I. Submit documentation of a minimum of a three year successful installation history of the products to be used.

1.5 **DELIVERY, STORAGE, AND HANDLING**

- A. Rehabilitation component materials are to be kept dry, protected from weather and stored under cover and in accordance with manufacturer's recommendations.
- B. Polymer and Cementitious protective coating materials are to be stored at temperatures as recommended by the manufacturer and handled according to their SDS. Do not store near flame, heat, or strong oxidants.

PART 2 - PRODUCTS

2.1 **SEAL MANHOLE (CHEMICAL GROUT):**

- A. Chemical Grout Sealing: Manhole sealing (chemical grouting) includes a high pressure washing of manhole, removal of all roots, deposits and loose debris and the sealing of individual leaks, barrel joints, base joint, pipe penetrations, lifting holes and other defects using pressure grouting with root inhibitor. Manholes to be sealed may consist of precast concrete, cast-in-place concrete, masonry block or brick.
 - 1. Equipment: The basic equipment shall consist of pumps, containers, injection packers, hoses, valves, and all necessary equipment and tools required to seal manhole joints and leaks. The chemical grout injection pumps shall be equipped with pressure meters that will provide for monitoring pressure during the injection of the chemical sealants. When necessary, liquid bypass lines

equipped with pressure-regulating bypass valves will be incorporated into the pumping system.

B. Materials:

1. Hydrophilic Polyurethane Chemical Grout: consists of premeasured, prepackaged polyurethane chemical grout with root inhibitor. The grout shall be non-toxic, non-flammable, high flash point (225° F) hydrophilic polymer of the type which is applied in a crack or open joint by use of a packer. When mixed with water, the material shall expand up to 4 times its original volume and cure to a closed cell polyurethane foam.
2. Hydrophobic Polyurethane Chemical Grout: consists of premeasured, prepackaged polyurethane chemical grout with root inhibitor. The grout shall be non-toxic, non-flammable, high flash point (225° F) hydrophobic polymer of the type which is applied in a crack or open joint by use of a packer.
3. Acrylamide Chemical Grout: consists of a low viscosity chemically reactive gel which is applied in a crack or open joint by use of a packer.
4. Water: Potable from municipal/public water supply.
5. Filler Gaskets: Oakum, use strong fibrous jute material, saturated with grout for use in plugging larger opening in combination with the polyurethane grout.
6. Utilize proper grout for the intended application as recommended by the manufacturer. Grout conditions may be adjusted for catalyzing the reaction, inhibiting the reaction, lowering the freezing temperature of the grout solution, adding fillers, providing strength, or for inhibiting root growth according to the instructions of the grout manufacturer and in the specified quantities as recommended by the grout manufacturer.
7. Utilize non-shrink grout for patching holes and filling gaps around pipe connections or left behind by drilling holes for injection.

C. Acceptable Sealant Grout Manufacturers and Products are:

1. a. Avanti AV-100 (acrylamide)
b. Avanti AV-118 Acrylic Gel (acrylamide)
2. De Neef Construction Chemicals
a. Hydro-Active Flex (hydrophobic polyurethane)
3. Sika Corporation
a. F Sika Fix HH (hydrophilic polyurethane)
b. Sika Fix HH LV (hydrophobic polyurethane)
4. Or approved equal.

2.2 LINE MANHOLE CHIMNEY, LINE MANHOLE BENCH AND CHANNEL AND LINE MANHOLE WALLS

A. Cementitious Liner:

1. Equipment: The basic equipment shall consist of pumps, containers, packers, hoses, nozzles, valves, and all necessary equipment and tools required to line manholes as required by the manufacturer.
2. Materials: The liner mix shall be cement-based, fiber-reinforced calcium aluminate mortar specifically designed to prevent infiltration and restore structural integrity, and to be spray applied to form a structurally enhanced, monolithic cementitious liner covering all interior manhole surfaces. Minimum

applied thickness shall be $\frac{1}{2}$ inch but application thickness must provide structurally stable manhole and form a barrier to water and gases. Material shall be premixed and specially formulated to resist hydrogen sulfide bacterial corrosion and abrasion in municipal sanitary sewer systems. The liner shall have the following properties as determined by laboratory testing:

3. The lining material shall meet the following minimum requirements at 28 days:

Compressive Strength	ASTM C109	9,000 psi
Flexural Strength	ASTM C293	700 psi
Shrinkage @ 90% Humidity	ASTM C596	0%
Tensile Strength	ASTM C496	>600 psi
Sulfide Resistance	ASTM C267	no visible attack at pH 2 or greater

4. Acceptable manufacturers and products are:
 - a. Strong Systems, Inc. - Strong Seal QSR
 - b. AP/M Permaform - Permacast Process
 - c. Quadex - QM-1s Restore
 - d. Or approved equal.

2.3 REPLACEMENT OF MANHOLE FRAME AND COVER

- A. Equipment
 1. Refer to Section 02601.
- B. Materials
 1. Refer to Section 02601.

PART 3 - EXECUTION

3.0 MANHOLE PRE-REHABILITATION INSPECTIONS

- A. Prior to rehabilitation of manholes, the Contractor will inspect each manhole to determine or confirm the scope of rehabilitation as outlined herein:
 1. Open each manhole and look for visible cracks, leaks, or evidence of past leaks. Areas of particular interest are manhole section joints and pipe openings.
 - a. If available compare to the existing inspection and note any condition changes or discrepancies.
 2. Clean each manhole as outlined below. After cleaning, again look for visible cracks, leaks or evidence of past leaks, and general condition of the manhole.
 3. Provide Engineer a written list of manhole defects at least three weeks before the scheduled work.
 4. The Engineer shall review and confirm the scope of required rehabilitation prior to work commencing. The Owner and Engineer reserve the right to modify the scope at each manhole as needed to obtain the proper rehabilitation. The Engineer shall provide written direction to the Contractor for any scope changes.

3.1 SEAL MANHOLE (CHEMICAL GROUT)

- A. Sealing Procedures for Precast, Brick and Block Manholes:

1. A high pressure washing of the manhole.
2. Removal and disposal of all roots, deposits, and loose debris.
3. At each point of leakage within the manhole structure (including at pipe penetrations), a hole shall be carefully drilled from within the manhole and shall extend through the entire manhole wall. In cases where there are multiple leaks around the circumference of the manhole, fewer holes may be drilled, providing all leakage is stopped from these holes.
4. Grout ports or sealant injection devices shall be placed in these previously drilled holes in such a way as to provide a watertight seal between the holes and the injection device.
5. A hose, or hoses, shall be attached to the injection device from an injection pump. Chemical sealing materials as specified shall then be pumped through the hose until material refusal is recorded on the pressure gage mounted on the pumping unit or a predetermined quantity of sealant has been injected. Care shall be taken during the pumping operation to insure that excessive pressures do not develop and cause damage to the manhole structure.
6. Upon completion of the injection, the ports shall be removed and the remaining holes filled with mortar and troweled flush with the surface of the manhole walls or other surfaces. The mortar used shall be a non-shrink hydraulic cement.

B. Manhole Joint Sealing Procedures:

1. Set grout ports or injectors at 90° intervals at each joint in the manhole, as well as at each pipe penetration, or similarly evenly spaced around identified leak location, if different from examples above.
2. Inject chemical grout. Ensure that chemical grout fills entire circumference of each manhole joint or pipe penetration, or other identified leakage point.
3. Cut out all loose or protruding wall joints, mastic and fill all interior lift holes and pipe penetrations with hydraulic cement. Finish shall be trowel smooth.

C. Temporarily bypass pump wastewater around manholes, use flow through plugs, or otherwise divert flows as necessary. Refer to Section 02751.

3.2 LINE MANHOLE CHIMNEY, LINE MANHOLE BENCH AND CHANNEL AND LINE MANHOLE WALLS

- A. Lining Procedures (Precast, Block and Brick Manholes): Liner materials shall be mixed per manufacturer's written specifications and applied using equipment specifically designed to meet required thickness and application requirements as set forth by the manufacturer.
- B. Any active sewer flows shall be dammed, plugged or diverted as required to ensure that the liquid flow is maintained below the surfaces to be lined. Any active infiltration sources must be identified and stopped or handled in accordance with manufacturer recommendations prior to lining operations.
 1. All surface preparations must be performed to meet or exceed manufacturer's recommendations prior to application
- C. Repair and lining materials must be applied by an experienced Applicator of the specified cementitious material and in accordance with the manufacturer's recommendations.
- D. Minimum placement thickness shall be 1/2-inch.

- E. Immediately following application, the cementitious liner material shall be troweled or brushed to achieve an even consistent surface.
- F. Cementitious liner material shall be permitted to cure according to manufacturer recommendations.
- G. In locations where only the Bench and Channel area are identified to be lined, the lining shall extend up the walls of the manhole a minimum of 6-inches in order to provide a uniform coating to line the entire junction of the manhole wall and table.
- H. In areas where the manhole walls are identified to be lined, the lining shall extend up beyond the top of the manhole chimney and onto the manhole frame, unless an internal mechanical seal is to be applied, in which case the lining shall continue to a point contained within the mechanical seal. At the lower extent, the manhole should be lined to the junction of the manhole wall and table.
- I. Temporarily bypass pump wastewater around manholes, use flow through plugs, or otherwise divert flows as necessary. Refer to Section 02751.

3.3 REPLACEMENT OF MANHOLE FRAME AND COVER

- A. Sawcut pavement using a circular drill bit to provide sawcut in a circular pattern around the manhole frame and cover.
- B. Remove and dispose of frame, and cover.
- C. Inspect the integrity of the chimney (brick and/or concrete ring and mortar).
- D. Cleaning the chimney surfaces to be re-mortared
- E. Furnish and set the new frame and cover with mortar on chimney to match grades
- F. Repair pavement, as necessary.
- G. Perform all manhole work in accordance with Section 02601
- H. Perform pavement restoration in accordance with Section 02513

3.4 MANHOLE CLEANING

- A. Prior to the rehabilitation of the existing manhole, the Contractor is required to pressure wash (minimum of 3,000 psi) and thoroughly clean the inside of the manhole including walls and invert shelf in accordance with manufacturer's instructions for products being applied.
- B. Remove and properly dispose of all roots, deposits, and other loose materials, preventing and debris from entering the sewer.
- C. The Contractor is required to provide wash water for the cleaning.
- D. Coordinate the cleaning of the manholes with the Owner.

3.5 TESTING

- A. Manhole Structure Sealing Test: Manhole structure sealing shall be visually inspected in the presence of the Engineer for watertightness against leakage of water into the manhole. All visible leaks and defects observed during inspection shall be repaired to the Engineer's satisfaction and at no additional cost to the Owner.
- B. Manhole Liner Test: Manhole cementitious liner shall be visually inspected in the presence of the Contractor for watertightness against leakage of water into the manhole. All visible leaks and defects observed during inspection shall be repaired to the Engineer's satisfaction and at no additional cost to the Owner.
 - 1. The Engineer may require an adhesion test on any manhole exhibiting signs of delamination or sloughing. Contractor shall repair the site of the adhesion test

at no additional cost to the Owner, as well as perform any liner repairs that may be required if the test fails.

- C. Drop piping repair and mechanical seals shall be visually inspected for watertightness and quality workmanship following successful installation.
- D. The Engineer and Owner reserve the right to inspect the rehabilitated manholes during the warranty period (including during periods when the groundwater table is higher than at the time the work is completed). The Owner or Engineer shall notify the Contractor prior to inspection and the Contractor shall be present during the inspection. Any leakage or defects in the work found by this inspection shall be corrected by the Contractor at no additional cost to the Owner.

END OF SECTION

SECTION 02766

SEWER LINE CHEMICAL ROOT CONTROL

PART 1 - GENERAL

1.1 DESCRIPTIONS

A. Work Description:

1. The purpose of the project specified herein is to apply chemical root control agent to sanitary sewers, in order to kill the root growth present in the lines and to inhibit re-growth, without permanently damaging the vegetation producing the roots. The chemical agent shall be Razorooter II™ or equivalent products approved by the Owner.

1.2 QUALITY ASSURANCE

- A. Bidders must be licensed with the Connecticut Department of Environmental Protection prior to the bid date. All Bidders must have a minimum level of pesticide application experience and employ a State Certified pesticide applicator on the job site at all times.
- B. Contractor shall provide Pollution Liability Insurance; in addition to all other insurance and bonds specified herein.
- C. The Contractor shall provide a money-back guarantee on all work specified herein as set forth below.

1.3 SUBMITTALS

- A. The Contractor shall submit a recent study from an accredited research facility documenting the effects of the proposed product on wastewater treatment plant facilities. At a minimum, this study shall address the toxicity of the product on wastewater treatment plant biota, including nitrifiers and denitrifiers, the toxicity of the product on treatment plant effluent, and the environmental fate of the product.
- B. Pollution and Liability Insurance:
 1. The Pollution Liability Insurance described herein is in addition to all other insurance required of the Contractor by the Owner, including any insurance described in the general conditions, any insurance required by law, or any other insurance requested by the Owner.
 2. At the time of the bid opening, the Contractor shall submit written evidence that he has obtained pollution liability coverage in accordance with the the Standard General Conditions.
- C. Qualifications:
 1. The Contractor shall demonstrate a minimum level of five (5) years direct experience in applying chemical sewer root control agents. The Contractor must have performed at least 10 other jobs similar in size and scope to the

work specified herein, and have treated in excess of 750,000 linear feet of sanitary sewer with it's own personnel within the last 24 months.

2. The Contractor shall be licensed as a pesticide application business with the Connecticut Department of Environmental Protection prior to the bid opening. Contractors who do not meet the experience and other qualifications specified herein shall not be considered for award of the contract. Each bidder is required to submit with his bid the contractor qualification form attached to these specifications. Additional references, up to ten, may be requested by the Owner.
3. All work shall be performed by Certified Pesticide Applicators licensed with the Connecticut Department of Environmental Protection. Certified Pesticide Applicators, shall have a minimum three years experience in performing the type of work specified, and shall each have personally performed a minimum of 500,000 linear feet of treatments in the last three years as a Certified Pesticide Applicator. A minimum of three Certified Pesticide Applicators that are registered with the Connecticut Department of Environmental Protection, prior to the bid, is required. License numbers for these three applicators and years of experience shall be submitted with the bid. Additional proof of applicator experience may be requested by the Owner.

1.4 COORDINATE ASSISTANCE PROVIDED BY THE OWNER:

- A. A representative of the Owner will accompany the Contractor's crew, and/or sewer system drawings will be provided showing the locations of the pipes to be treated.
- B. The Owner shall provide for the entering of private lands, public lands and right of ways.

PART 2 - PRODUCTS

2.1 COMPOSITION OF THE CHEMICAL ROOT CONTROL MATERIAL

The chemical root control agent shall be Razorooter™ II or equivalent product that is approved by the Owner. The chemical root control agent shall be registered with the EPA and the Connecticut Department of Environmental Protection, prior to the bid opening, and shall be labeled for use in sewers to control tree roots. The chemical Root control agent shall contain an active ingredient for controlling sewer roots and deterring their re-growth. There shall also be a surfactant system to deliver the active ingredient (herbicide) to the target root tissue.

- A. Active ingredient:
 1. Shall be a Category "E" compound, the most favorable rating attainable on the U.S. EPA's chronic exposure toxicological rating scale.
 2. Shall not be considered a carcinogen, teratogen, mutagen, or oncogene, based on laboratory testing.
 3. Shall be non-volatile in order to minimize exposure to collections system workers, treatment plant operators and homeowners through inhalation.

4. Products containing the active ingredient(s) metam-sodium or copper sulfate are not allowed.
- B. Surfactant system:
 1. Shall produce a dense, small bubble, clinging foam, which sustains its shape for a minimum of one hour.
 2. Shall not be considered a carcinogen, teratogen, mutagen, or oncogene, based on laboratory testing.
 3. Shall contain an Alkylpolyglucoside (formulations of vegetable oil and carbohydrate from agricultural products).

PART 3 - EXECUTION

3.1 GENERAL

- A. The Contractor is responsible for all property damage and for all cleanup and restoration associated with any chemical spill.
- B. The Contractor shall be responsible for Traffic Control.
- C. The Contractor shall use a reduced-pressure-zone backflow prevention device or air gap whenever accessing fresh water for mixing chemical.
- D. The Contractor shall return yearly throughout the life of the guarantee, in order to evaluate the success of the project, and to arrange any free guarantee work that may arise.
- E. The Contractor shall comply with all Federal, State and Local Laws, with special attention to those laws that pertain to the handling, transportation, and use of any hazardous materials, and disposal of all pesticide containers.

3.2 CONTRACTOR GUARANTEE

- A. For each sewer section (manhole-to-manhole) treated under the Contract:
 1. At the option of the Owner, the Contractor shall, at his own expense, re treat a sewer section in the event that live roots are found in the section within six months after the application.
 - a.) Re-treatments, performed at no charge in honor of the guarantee, do not extend the expiration date of the guarantee.
 2. The guarantee applies to sewer stoppages caused by live tree roots. It does not apply to stoppages caused by grease or other foreign matter; flat, collapsed or deformed pipe; or flooding caused by a surcharged or plugged sewer section downstream from a guaranteed sewer section. This guarantee applies to main line sewers only.

3.3 MANNER OF APPLICATION

- A. All work shall be performed according to label instructions and in accordance with the best recommended practice for conditions present in the line under treatment. All applications shall be done by foaming or other methods as provided on the product label.
- B. The application of material shall be performed in such a way as to contact roots within the primary main line sewer to be treated. Effort will also be made to

penetrate secondary lateral sewers in order to contact roots residing in the “wye” connections.

C. Hydraulic sewer cleaning machines will reduce treatment effectiveness by damaging root growths and inhibiting their uptake of chemical. Hydraulic sewer cleaning machines shall not be used prior to, or during the treatment process.

3.4 **PROPERTY DAMAGES CAUSED BY THE CONTRACTOR**

A. Should the Contractor or his employees cause any damage to public or private property, the Contractor will be required to make repairs immediately.

3.5 **PROTECTION OF WASTEWATER TREATMENT PLANT**

A. The Contractor shall take all steps necessary and appropriate to prevent adverse effects on wastewater treatment plant processes during the application process.

B. Notwithstanding the requirement that the active ingredient shall not adversely effect wastewater treatment plant processes, in the event that a wastewater treatment plant experiences any reduction in operating efficiency during the execution of the contract, the Contractor shall immediately suspend all applications, at the direction of the Owner. The contractor shall continue operations only after problems at the wastewater treatment plant have been corrected, satisfactory to the Wastewater Treatment Plant Operator.

3.6 **COMPLIANCE WITH LAWS**

A. The Contractor is directed to ensure compliance with all Federal, State and Local ordinances pertaining to the type of work specified herein. Particular attention shall be paid to those laws and ordinances relating to transportation of material (DOT), the application of sewer root control herbicides (US EPA), and traffic safety regulations. The Contractor's Federal DOT number and material EPA registration number must be submitted with bid.

END OF SECTION

APPENDICES

APPENDIX A
Manhole Inspection Reports

Sheet No. 154	Surveyor's name AEZ/JDM	Certificate Number U-313-17656	Date 2013/08/30
System Owner Trumbull, CT	Survey Customer		
Drainage Area	Location (No. & Name) 6 Apple Orchard		
P.O. No.	Locality/City Name Trumbull, CT		
Further Location Details		Inspection Level Level 2	
Outgoing Rim to Invert	20.8 ft.	Outgoing Grade to Invert	20.8 ft.
Use of Sewer	Sanitary	Year Laid	Year Rehabilitated
Purpose	Sewer System Evaluation Survey		
Pre-Cleaning	Sewer Category		
Location Code	No Pre-Cleaning		
Access Point Type	Date Cleaned		
Northing	Easting		
Inspection Status	Coordinate System		
Additional Information			
Manhole Surface Types			
<input checked="" type="checkbox"/> Concrete Pavement <input type="checkbox"/> Concrete Collar <input type="checkbox"/> Asphalt <input type="checkbox"/> Grass/Dirt <input type="checkbox"/> Gravel <input type="checkbox"/> Other			

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.																				
	Cover Size: 26.0 in.	Cover Size Width: Cover Bearing Surface Diameter Width:																				
	Cover Material: Cast Iron	# of Vent Holes: Cover Frame Fit: Good																				
		Vent Hole Diameter:																				
Cover Type <table border="1"> <tr> <td><input checked="" type="checkbox"/> Solid</td> <td><input type="checkbox"/> Bolted</td> </tr> <tr> <td><input type="checkbox"/> Vented/Slots</td> <td><input type="checkbox"/> Locking</td> </tr> <tr> <td><input type="checkbox"/> Gasketed</td> <td><input type="checkbox"/> Inner Cover</td> </tr> <tr> <td><input type="checkbox"/> Hatch Single</td> <td><input type="checkbox"/> Lamphole</td> </tr> <tr> <td><input type="checkbox"/> Hatch Double</td> <td></td> </tr> </table>		<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted	<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking	<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover	<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole	<input type="checkbox"/> Hatch Double		Cover Condition <table border="1"> <tr> <td><input checked="" type="checkbox"/> Sound</td> <td><input type="checkbox"/> Missing</td> </tr> <tr> <td><input type="checkbox"/> Cracked</td> <td><input type="checkbox"/> Corroded/Pitted</td> </tr> <tr> <td><input type="checkbox"/> Broken</td> <td><input type="checkbox"/> Bolts Missing</td> </tr> <tr> <td><input type="checkbox"/> Restraint Missing</td> <td></td> </tr> <tr> <td><input type="checkbox"/> Restraint Defective</td> <td></td> </tr> </table>	<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing	<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted	<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing	<input type="checkbox"/> Restraint Missing		<input type="checkbox"/> Restraint Defective	
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Sheet No. 154	Survey Date 2013/08/30	P.O. No.																								
Location (No. & Name) 6 Apple Orchard Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																								
Adjustment Ring <table border="1"> <tr> <td>MH Adjustment Ring Type: None</td> <td>MH Adjustment Ring</td> </tr> <tr> <td>MH Adjustment Ring Material:</td> <td><input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td>MH Adjustment Ring Height:</td> <td><input type="checkbox"/> Cracked <input type="checkbox"/> Leaking</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation</td> </tr> </table>			MH Adjustment Ring Type: None	MH Adjustment Ring	MH Adjustment Ring Material:	<input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn	MH Adjustment Ring Height:	<input type="checkbox"/> Cracked <input type="checkbox"/> Leaking		<input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation																
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Frame <table> <tr> <td>Frame Material: Cast Iron</td> <td>Frame Offset Distance: 0 in.</td> </tr> <tr> <td>Frame Bearing Surface Width: 1.0 in.</td> <td>Frame Depth:</td> </tr> <tr> <td>Frame Bearing Surface Depth: 2.0 in.</td> <td>Frame Seal Inflow:</td> </tr> <tr> <td>Frame Clear Opening Diameter: 24.0 in.</td> <td></td> </tr> </table> <table border="1"> <tr> <td colspan="2">Frame Condition</td> </tr> <tr> <td><input checked="" type="checkbox"/> Sound</td> <td><input type="checkbox"/> Missing</td> </tr> <tr> <td><input type="checkbox"/> Cracked</td> <td><input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td><input type="checkbox"/> Broken</td> <td><input type="checkbox"/> Coated</td> </tr> </table> <table border="1"> <tr> <td colspan="2">Frame Seal Condition</td> </tr> <tr> <td><input type="checkbox"/> Sound</td> <td><input type="checkbox"/> Loose/Not Attached</td> </tr> <tr> <td><input type="checkbox"/> Cracked</td> <td></td> </tr> <tr> <td><input checked="" type="checkbox"/> Missing</td> <td><input type="checkbox"/> Offset</td> </tr> </table>			Frame Material: Cast Iron	Frame Offset Distance: 0 in.	Frame Bearing Surface Width: 1.0 in.	Frame Depth:	Frame Bearing Surface Depth: 2.0 in.	Frame Seal Inflow:	Frame Clear Opening Diameter: 24.0 in.		Frame Condition		<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing	<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted/Worn	<input type="checkbox"/> Broken	<input type="checkbox"/> Coated	Frame Seal Condition		<input type="checkbox"/> Sound	<input type="checkbox"/> Loose/Not Attached	<input type="checkbox"/> Cracked		<input checked="" type="checkbox"/> Missing	<input type="checkbox"/> Offset
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Bench <table> <tr> <td>Bench Present?: Yes</td> <td></td> </tr> <tr> <td>Bench Material: Brick</td> <td></td> </tr> <tr> <td>Bench Coating/Liner:</td> <td></td> </tr> </table>			Bench Present?: Yes		Bench Material: Brick		Bench Coating/Liner:																			
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Bench Coating/Liner:																										
Channel/Step <table border="1"> <tr> <td>Channel</td> <td>Step</td> </tr> <tr> <td>Channel Material: Brick</td> <td># Steps: 19</td> </tr> <tr> <td>Channel Type: Formed</td> <td></td> </tr> <tr> <td>Channel Exposure: Fully Opened</td> <td></td> </tr> <tr> <td>Channel Installed Yes</td> <td>Step Material: Metal</td> </tr> </table>			Channel	Step	Channel Material: Brick	# Steps: 19	Channel Type: Formed		Channel Exposure: Fully Opened		Channel Installed Yes	Step Material: Metal														
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Channel Installed Yes	Step Material: Metal																									

Sheet No. 154

Survey Date 2013/08/30

P.O. No.

Location (No. & Name) 6 Apple Orchard

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	20.8 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	20.7 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
17.5 ft.			WI	IR		J					10			~3 gpm

Sheet No. 151 Surveyor's name AEZ/JDM Certificate Number U-313-17656 Date 2013/08/30
 System Owner Trumbull, CT Survey Customer Time 12:36
 Drainage Area Location (No. & Name) Apple Orchard & Fern Cir
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 20.2 ft. Outgoing Grade to Invert 20.2 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

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Sheet No. 151

Survey Date 2013/08/30

P.O. No.

Location (No. & Name) Apple Orchard & Fern Cir

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	20.2 ft.	Out		PVC	C	8 in.			S	S	GR	
Comments													
2	10	20.1 ft.	In		PVC	C	8 in.			S	S	GR	
Comments													

Sheet No. 171 Surveyor's name AEZ/JDM Certificate Number U-313-17656 Date 2013/08/30
 System Owner Trumbull, CT Survey Customer Time 14:49
 Drainage Area Location (No. & Name) 62 Fern Cir
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 3.4 ft. Outgoing Grade to Invert 3.4 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 25.0 in.																				
	Cover Size: 26.0 in. Cover Size Width:	Cover Bearing Surface Diameter Width:																				
	Cover Material: Cast Iron	# of Vent Holes: Cover Frame Fit: Good																				
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	Channel Type: Formed																												
	Channel Exposure: Fully Opened																												
	Channel Installed Yes																												
Step	# Steps: 0																												
	Step Material:																												

Sheet No. 171

Survey Date 2013/08/30

P.O. No.

Location (No. & Name) 62 Fern Cir

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	3.4 ft.	Out	CAS	C	8 in.		S		S	GR		
Comments													
2	1	3.3 ft.	In	XXX	C	8 in.		S		S	GR		
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
2.9 ft.			B	IW			J				4			

Sheet No. 149 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/08/01
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Fern Cir & Oriole Ln
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 7.7 ft. Outgoing Grade to Invert 7.7 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 25.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 149	Survey Date 2013/08/01	P.O. No.																											
Location (No. & Name) Fern Cir & Oriole Ln		Inspection Level Level 2																											
Locality/City Name Trumbull, CT		Inspection Status Surface Inspection																											
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	Channel Type: Formed																												
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	Channel Installed Yes																												
Step	# Steps: 5																												
	Step Material: Metal																												

Sheet No. 149

Survey Date 2013/08/01

P.O. No.

Location (No. & Name) Fern Cir & Oriole Ln

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	7.7 ft.	Out		PVC	C	C	10 in.		S	S	GR	
Comments													
2	10	7.6 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													
3	2	7.6 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Sheet No. 148 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/08/01
 System Owner Trumbull, CT Survey Customer Time 13:21
 Drainage Area Location (No. & Name) Oriole Lane
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 8.2 ft. Outgoing Grade to Invert 8.2 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 25.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 148	Survey Date 2013/08/01	P.O. No.																											
Location (No. & Name) Oriole Lane Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
<table border="1"> <tr> <td>Adjustment Ring</td> <td>MH Adjustment Ring Type: None</td> <td>MH Adjustment Ring</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Material:</td> <td><input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Height:</td> <td><input type="checkbox"/> Cracked <input type="checkbox"/> Leaking</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation</td> </tr> </table>			Adjustment Ring	MH Adjustment Ring Type: None	MH Adjustment Ring		MH Adjustment Ring Material:	<input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn		MH Adjustment Ring Height:	<input type="checkbox"/> Cracked <input type="checkbox"/> Leaking			<input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation															
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Sheet No. 148

Survey Date 2013/08/01

P.O. No.

Location (No. & Name) Oriole Lane

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	8.2 ft.	Out		PVC	C	C	10 in.		S	S	GR	
Comments													
2	12	8.1 ft.	In		PVC	C	C	10 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
4.9 ft.			WI	IS							6			
4.9 ft.			WI	IS							7			
4.9 ft.			WI	IS							4			

Sheet No. 146 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/08/01
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) 74 Oriole Lane
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 7.3 ft. Outgoing Grade to Invert 7.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 25.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 146	Survey Date 2013/08/01	P.O. No.																											
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Step	# Steps: 5																												
	Step Material: Metal																												

Sheet No. 146

Survey Date 2013/08/01

P.O. No.

Location (No. & Name) 74 Oriole Lane

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	7.3 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	7.2 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
2.4 ft.			COI	IW							11			Lift hole
3.8 ft.			WI	IS		J					6	9		

Sheet No. 143 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/08/01
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Oriole Lane
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 10.3 ft. Outgoing Grade to Invert 10.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 25.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 143	Survey Date 2013/08/01	P.O. No.																											
Location (No. & Name) Oriole Lane Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
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	Channel Exposure: Fully Opened																												
	Channel Installed Yes																												
Step	# Steps: 5																												
	Step Material: Plastic																												

Sheet No. 143

Survey Date 2013/08/01

P.O. No.

Location (No. & Name) Oriole Lane

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	10.3 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	10.2 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
8.3 ft.			WI	IR							1			Lift Hole

Sheet No. 157 Surveyor's name AEZ/JDM Certificate Number U-313-17656 Date 2013/08/30
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) 26 Robinwood
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 10.1 ft. Outgoing Grade to Invert 10.1 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 25.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 157	Survey Date 2013/08/30	P.O. No.																											
Location (No. & Name) 26 Robinwood Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
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	Channel Exposure: Fully Opened																												
	Channel Installed Yes																												
Step	# Steps: 6																												
	Step Material: Plastic																												

Sheet No. 157

Survey Date 2013/08/30

P.O. No.

Location (No. & Name) 26 Robinwood

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	10.1 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	10.0 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	ln1	ln2	Fr	To	ImRef	Remarks
5.2 ft.			WI	IS		J					5			
5.7 ft.			WI	IS							6			
8.3 ft.			WI	IS							7			

Sheet No. 164 Surveyor's name AEZ/JDM Certificate Number U-313-17656 Date 2013/08/30
 System Owner Trumbull, CT Survey Customer Time 14:32
 Drainage Area Location (No. & Name) 67 Puritan
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 7.3 ft. Outgoing Grade to Invert 7.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 164	Survey Date 2013/08/30	P.O. No.																											
Location (No. & Name) 67 Puritan Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
<table border="1"> <tr> <td>Adjustment Ring</td> <td>MH Adjustment Ring Type: None</td> <td>MH Adjustment Ring</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Material:</td> <td><input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Height:</td> <td><input type="checkbox"/> Cracked <input type="checkbox"/> Leaking</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation</td> </tr> </table>			Adjustment Ring	MH Adjustment Ring Type: None	MH Adjustment Ring		MH Adjustment Ring Material:	<input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn		MH Adjustment Ring Height:	<input type="checkbox"/> Cracked <input type="checkbox"/> Leaking			<input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation															
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	Channel Installed Yes																												
Step	# Steps: 3																												
	Step Material: Metal																												

Sheet No. 164

Survey Date 2013/08/30

P.O. No.

Location (No. & Name) 67 Puritan

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	7.3 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	7.2 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
4.3 ft.			WI	IW			J				12	12		

Sheet No. 70 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/08/26
 System Owner Trumbull, CT Survey Customer Time 13:45
 Drainage Area Location (No. & Name) Wesley Street
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 17.4 ft. Outgoing Grade to Invert 17.4 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 25.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 70	Survey Date 2013/08/26	P.O. No.																											
Location (No. & Name) Wesley Street Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
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Channel Exposure: Fully Opened																													
Channel Installed Yes	Step Material: Plastic																												

Sheet No. 70

Survey Date 2013/08/26

P.O. No.

Location (No. & Name) Wesley Street

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	17.4 ft.	Out	AC	C	18 in.		S		S	GR		
Comments													
2	12	17.3 ft.	In	PVC	C	18 in.		S		S	GR		
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
13.3 ft.			WI	IW							11			

Sheet No. 123 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/30
 System Owner Trumbull, CT Survey Customer Time 19:26
 Drainage Area Location (No. & Name) 45 Twitchgrass
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 10.4 ft. Outgoing Grade to Invert 10.4 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 25.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 123	Survey Date 2013/07/30	P.O. No.																											
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Sheet No. 123

Survey Date 2013/07/30

P.O. No.

Location (No. & Name) 45 Twitchgrass

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	10.4 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	10.3 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
4.4 ft.			WI	IS							9			
8.7 ft.			WI	IS							6			Lift hole
8.7 ft.			WI	IS							12			Lift hole

Sheet No. 125 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/30
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Franklin & Twitchgrass
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 12.7 ft. Outgoing Grade to Invert 12.7 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 25.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

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Sheet No. 125	Survey Date 2013/07/30	P.O. No.
Location (No. & Name) Franklin & Twitchgrass		Inspection Level Level 2
Locality/City Name Trumbull, CT		Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Dir	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	12.7 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	3	12.6 ft.	In		PVC	C	C	8 in.		S	S	IL	
Comments													
3	3	6.7 ft.	In		PVC	C	C	8 in.		S	S	IU	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
8.0 ft.			WI	ID		J					6			
8.0 ft.			WI	IG		J					12			~3 gpm
8.0 ft.			WI	IR		J					2			

Sheet No. 90 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/26
 System Owner Trumbull, CT Survey Customer Time 12:37
 Drainage Area Location (No. & Name) Timberlane & Tanager
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 7.3 ft. Outgoing Grade to Invert 7.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 25.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 90	Survey Date 2013/07/26	P.O. No.																											
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Sheet No. 90

Survey Date 2013/07/26

P.O. No.

Location (No. & Name) Timberlane & Tanager

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	7.3 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	7.2 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													
3	3	7.2 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
1.7 ft.			CMI	DB							12	12		Minor displaced brick on chimney
4.3 ft.			WI	IW		J					3	4		
5.8 ft.			WI	IS							4			Lift hole, patch fell out, I-I present
5.8 ft.			WI	IW							4			Lift hole, patch fell out, I-I present

Sheet No. 86 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/26
 System Owner Trumbull, CT Survey Customer Time 11:17
 Drainage Area Location (No. & Name) Timberlane
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 22.1 ft. Outgoing Grade to Invert 22.1 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 25.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 86	Survey Date 2013/07/26	P.O. No.																											
Location (No. & Name) Timberlane Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
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Channel Exposure: Fully Opened																													
Channel Installed Yes	Step Material: Plastic																												

Sheet No. 86

Survey Date 2013/07/26

P.O. No.

Location (No. & Name) Timberlane

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	22.1 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	22.0 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
16.0 ft.			WI	IS		J					8			
18.8 ft.			WI	IS		J					9			
18.8 ft.			WI	IS		J					1			

Sheet No. 85 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/26
 System Owner Trumbull, CT Survey Customer Time 11:11
 Drainage Area Location (No. & Name) Timberlane
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 22.8 ft. Outgoing Grade to Invert 22.8 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 85	Survey Date 2013/07/26	P.O. No.																											
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Channel Exposure: Fully Opened																													
Channel Installed Yes	Step Material: Plastic																												

Sheet No. 85

Survey Date 2013/07/26

P.O. No.

Location (No. & Name) Timberlane

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	22.8 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	12	22.7 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
17.5 ft.			WI	IW							6			Leaking lift hole
17.5 ft.			WI	IW							12			Leaking lift hole

Sheet No. 133 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/30
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) 58 Wisteria Drive
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 8.3 ft. Outgoing Grade to Invert 8.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 25.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 133	Survey Date 2013/07/30	P.O. No.																											
Location (No. & Name) 58 Wisteria Drive Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
<table border="1"> <tr> <td>Adjustment Ring</td> <td>MH Adjustment Ring Type: None</td> <td>MH Adjustment Ring</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Material:</td> <td><input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Height:</td> <td><input type="checkbox"/> Cracked <input type="checkbox"/> Leaking</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation</td> </tr> </table>			Adjustment Ring	MH Adjustment Ring Type: None	MH Adjustment Ring		MH Adjustment Ring Material:	<input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn		MH Adjustment Ring Height:	<input type="checkbox"/> Cracked <input type="checkbox"/> Leaking			<input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation															
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<table border="1"> <tr> <td>Wall</td> <td>Wall Diameter 1:</td> <td>Wall Depth: 7.7 ft.</td> </tr> <tr> <td></td> <td>Wall Diameter 2:</td> <td>Interior Wall Coating/Liner:</td> </tr> <tr> <td></td> <td>Wall Material: Concrete (reinforced)</td> <td>Exterior Wall Coating/Liner:</td> </tr> </table>			Wall	Wall Diameter 1:	Wall Depth: 7.7 ft.		Wall Diameter 2:	Interior Wall Coating/Liner:		Wall Material: Concrete (reinforced)	Exterior Wall Coating/Liner:																		
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	Channel Exposure: Fully Opened																												
	Channel Installed Yes																												
Step	# Steps: 5																												
	Step Material: Plastic																												

Sheet No. 133

Survey Date 2013/07/30

P.O. No.

Location (No. & Name) 58 Wisteria Drive

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	8.3 ft.	Out		PVC	C	C	8 in.		S	S	GR	
Comments													
2	1	8.2 ft.	In		PVC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
4.7 ft.			WI	IW		J					8	9		
4.7 ft.			WI	SAV		J					8	9		

Sheet No. 79 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/24
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Val-De-Mere ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 7.2 ft. Outgoing Grade to Invert 7.2 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Easement/Right of Way Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input checked="" type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 79	Survey Date 2013/07/24	P.O. No.																											
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Locality/City Name Trumbull, CT		Inspection Status Surface Inspection																											
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	Channel Exposure: Fully Opened																												
	Channel Installed Yes																												
Step	# Steps: 4																												
	Step Material: Metal																												

Sheet No. 79

Survey Date 2013/07/24

P.O. No.

Location (No. & Name) Val-De-Mere ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	7.2 ft.	Out		AC	C	C	12 in.		S	S	GR	
Comments													
2	10	7.1 ft.	In		AC	C	C	12 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
5.5 ft.			WI	IW			J				4			

Sheet No. 110 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/29
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Val-De-Mere ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 19.5 ft. Outgoing Grade to Invert 19.5 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Easement/Right of Way Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input checked="" type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 110	Survey Date 2013/07/29	P.O. No.																											
Location (No. & Name) Val-De-Mere ESMT		Inspection Level Level 2																											
Locality/City Name Trumbull, CT		Inspection Status Surface Inspection																											
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	Step Material: Metal																												

Sheet No. 110

Survey Date 2013/07/29

P.O. No.

Location (No. & Name) Val-De-Mere ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

	Clk	Rim to											PSR
Num	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond			
1	6	19.5 ft.	Out	AC	C	12 in.		S	S	GR			
		Comments											
2	9	19.4 ft.	In	AC	C	8 in.		S	S	OL			
		Comments											
3	9	5.6 ft.	In	AC	C	8 in.		S	S	OU			
		Comments											
4	12	19.4 ft.	In	AC	C	12 in.		S	S	GR			
		Comments											

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
6.8 ft.			WI	IS		J					10			
6.8 ft.			WI	IS		J					4			
8.0 ft.			WI	IS		J					7			
8.0 ft.			WI	IS		J					9			

Sheet No. 109 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/29
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Val-De-Mere ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 6.1 ft. Outgoing Grade to Invert 6.1 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Easement/Right of Way Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 24.0 in.
 Cover Size: 24.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 109	Survey Date 2013/07/29	P.O. No.																											
Location (No. & Name) Val-De-Mere ESMT		Inspection Level Level 2																											
Locality/City Name Trumbull, CT		Inspection Status Surface Inspection																											
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Step	# Steps: 3																												
	Step Material: Metal																												

Sheet No. 109

Survey Date 2013/07/29

P.O. No.

Location (No. & Name) Val-De-Mere ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	6.1 ft.	Out		AC	C	C	8 in.		S	S	GR	
Comments													
2	12	6.0 ft.	In		AC	C	C	6 in.		S	S	LB	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
3.6 ft.			WI	IW		J					9			
3.6 ft.			WI	DAE		J		5			9			

Sheet No. 111 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/29
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Val-De-Mere ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 12.3 ft. Outgoing Grade to Invert 12.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Easement/Right of Way Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input checked="" type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 111	Survey Date 2013/07/29	P.O. No.																						
Location (No. & Name) Val-De-Mere ESMT		Inspection Level Level 2																						
Locality/City Name Trumbull, CT		Inspection Status Surface Inspection																						
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Wall Diameter 2:	Interior Wall Coating/Liner:																							
Wall Material: Concrete (reinforced)	Exterior Wall Coating/Liner:																							
Bench <table> <tr> <td>Bench Present?: Yes</td> <td></td> </tr> <tr> <td>Bench Material: Brick</td> <td></td> </tr> <tr> <td>Bench Coating/Liner: Cementitious</td> <td></td> </tr> </table>			Bench Present?: Yes		Bench Material: Brick		Bench Coating/Liner: Cementitious																	
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Sheet No. 111

Survey Date 2013/07/29

P.O. No.

Location (No. & Name) Val-De-Mere ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	12.3 ft.	Out	AC	C	12 in.		S		S	GR		
Comments													
2	12	12.2 ft.	In	AC	C	8 in.		S		S	GR		
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
10.7 ft.			WI	IW		J					6	12		
10.7 ft.			WI	DAE		J		5			10			

Sheet No. 108 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/29
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Val-De-Mere ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 6.4 ft. Outgoing Grade to Invert 6.4 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Easement/Right of Way Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input checked="" type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 108	Survey Date 2013/07/29	P.O. No.																						
Location (No. & Name) Val-De-Mere ESMT		Inspection Level Level 2																						
Locality/City Name Trumbull, CT		Inspection Status Surface Inspection																						
Adjustment Ring <table border="1"> <tr> <td>MH Adjustment Ring Type: None</td> <td>MH Adjustment Ring</td> </tr> <tr> <td>MH Adjustment Ring Material:</td> <td><input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td>MH Adjustment Ring Height:</td> <td><input type="checkbox"/> Cracked <input type="checkbox"/> Leaking</td> </tr> <tr> <td></td> <td><input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation</td> </tr> </table>			MH Adjustment Ring Type: None	MH Adjustment Ring	MH Adjustment Ring Material:	<input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn	MH Adjustment Ring Height:	<input type="checkbox"/> Cracked <input type="checkbox"/> Leaking		<input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation														
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Channel Type: Formed																								
Channel Exposure: Fully Opened																								
Channel Installed Yes																								
# Steps: 3																								
Step Material: Metal																								

Sheet No. 108

Survey Date 2013/07/29

P.O. No.

Location (No. & Name) Val-De-Mere ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Dir	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	6.4 ft.	Out		AC	C	C	12 in.		S	S	GR	
Comments													
2	12	6.3 ft.	In		AC	C	C	8 in.		S	S	GR	
Comments													
3	2	6.3 ft.	In		AC	C	C	12 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
1.3 ft.			CMI	DAE				5			1			
1.3 ft.			CMI	DAE				5			2			
1.3 ft.			CMI	DAE				5			3			
4.1 ft.			WI	IW		J					2	6		

Sheet No. 99 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/26
 System Owner Trumbull, CT Survey Customer Time 14:31
 Drainage Area Location (No. & Name) Lakewood and Condo ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 11.3 ft. Outgoing Grade to Invert 11.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Easement/Right of Way Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input checked="" type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input checked="" type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 99

Survey Date 2013/07/26

P.O. No.

Location (No. & Name) Lakewood and Condo ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Adjustment Ring

MH Adjustment Ring Type: None

MH Adjustment Ring

<input type="checkbox"/> Sound	<input type="checkbox"/> Corroded/Pitted/Worn
<input type="checkbox"/> Cracked	<input type="checkbox"/> Leaking
<input type="checkbox"/> Broken	<input type="checkbox"/> Poor Installation

MH Adjustment Ring Materi

MH Adjustment Ring Height:

Frame

Frame Material: Cast Iron

Frame Offset Distance: 0 in.

Frame Bearing Surface Width: 1.0 in.

Frame Depth:

Frame Bearing Surface Depth: 2.0 in.

Frame Seal Inflow:

Frame Clear Opening Diameter: 24.0 in.

Frame Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input checked="" type="checkbox"/> Corroded/Pitted/Worn
<input type="checkbox"/> Broken	<input type="checkbox"/> Coated

Frame Seal Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Loose/Not Attached
<input type="checkbox"/> Cracked	<input type="checkbox"/> Offset
<input checked="" type="checkbox"/> Missing	<input type="checkbox"/> Offset

Chimney

Chimney Material 1: Brick

Interior Chimney Coating/Liner:

Chimney Material 2:

Chimney Clear Opening:

Exterior Chimney Coating/Liner:

Chimney Depth: 1.3 ft.

Chimney I/I:

Cone

Cone Type: Conical off centered

Cone Depth: 4.8 ft.

Exterior Cone Coating/Liner:

Cone Material: Concrete (reinforced)

Interior Cone Coating/Liner:

Wall

Wall Diameter 1:

Wall Depth: 10.6 ft.

Wall Diameter 2:

Interior Wall Coating/Liner:

Wall Material: Concrete (reinforced)

Exterior Wall Coating/Liner:

Bench

Bench Present?: Yes

Bench Material: Brick

Bench Coating/Liner:

Channel/Step**Channel**

Channel Material: Concrete (non-reinforced)

Step

Steps: 8

Channel Type: Formed

Step Material: Metal

Channel Exposure: Fully Opened

Channel Installed Yes

Sheet No. 99

Survey Date 2013/07/26

P.O. No.

Location (No. & Name) Lakewood and Condo ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	11.3 ft.	Out		AC	C	C	12 in.		S	S	GR	
Comments													
2	12	11.2 ft.	In		AC	C	C	12 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
10.6 ft.			B	IW		J					12	7		
10.6 ft.			WI	MGO										Patchy buildup of dirt or deposits on walls. Not

Sheet No. 7 Surveyor's name AEZ/JDM/WAE Certificate Number U-313-17656 Date 2013/07/15
 System Owner Trumbull, CT Survey Customer Time 14:18
 Drainage Area Location (No. & Name) 3 Briarcroft Rd
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 8.7 ft. Outgoing Grade to Invert 8.7 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 7	Survey Date 2013/07/15	P.O. No.																		
Location (No. & Name) 3 Briarcroft Rd Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																		
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Sheet No. 7

Survey Date 2013/07/15

P.O. No.

Location (No. & Name) 3 Briarcroft Rd

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	8.7 ft.	Out	AC	C	8 in.			S	S	GR		

Comments

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
8.6 ft.			C	IW		J					12			

Sheet No. 13 Surveyor's name AEZ/JDM/WAE Certificate Number U-313-17656 Date 2013/07/15
 System Owner Trumbull, CT Survey Customer Time 14:42
 Drainage Area Location (No. & Name) Lakewood ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 13.3 ft. Outgoing Grade to Invert 13.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
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 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
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Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

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		Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
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Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
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Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
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Sheet No. 13

Survey Date 2013/07/15

P.O. No.

Location (No. & Name) Lakewood ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	13.3 ft.	Out	AC	C	C	8 in.			S	S	GR	
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2	12	13.2 ft.	In	AC	C	C	8 in.			S	S	OL	
	Comments												
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	Comments												
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	Comments												

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
11.3 ft.			WI	IR							11			

Sheet No. 40 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/16
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Calhoun & Gwendolyn
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 13.6 ft. Outgoing Grade to Invert 13.6 ft. Rim to Grade 0.0 ft.
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 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
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 Vent Hole Diameter:

Cover Type

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<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 40	Survey Date 2013/07/16	P.O. No.																											
Location (No. & Name) Calhoun & Gwendolyn		Inspection Level Level 2																											
Locality/City Name Trumbull, CT		Inspection Status Surface Inspection																											
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Step	# Steps: 10																												
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Sheet No. 40

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) Calhoun & Gwendolyn

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	13.6 ft.	Out		AC	C	C	8 in.		S	S	GR	
	Comments												
2	9	13.5 ft.	In		AC	C	C	8 in.		S	S	OL	
	Comments												
3	9	7.7 ft.	In		AC	C	C	8 in.		S	D	OU	
	Comments												
4	11	13.5 ft.	In		AC	C	C	8 in.		S	S	OL	
	Comments												
5	11	8.0 ft.	In		AC	C	C	8 in.		S	D	OU	
	Comments												
6	3	13.5 ft.	In		AC	C	C	8 in.		S	S	GR	
	Comments												

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
7.7 ft.			WI	IS							9			
8.0 ft.			WI	IS							11			
8.0 ft.			WI	SAV	S01						10			
12.0 ft.			WI	IW		J					2	3		
13.0 ft.			WI	SAV	F01						10			

Sheet No. 39 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/16
 System Owner Trumbull, CT Survey Customer Time 13:23
 Drainage Area Location (No. & Name) 72 Calhoun
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 11.9 ft. Outgoing Grade to Invert 11.9 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 39	Survey Date 2013/07/16	P.O. No.															
Location (No. & Name) 72 Calhoun Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection															
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	Channel Type: Formed																
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	Channel Installed Yes																
Step	# Steps: 8																
	Step Material: Metal																

Sheet No. 39

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) 72 Calhoun

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	11.9 ft.	Out		AC	C	C	8 in.		S	S	GR	
Comments													
2	12	11.8 ft.	In		AC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
10.4 ft.			WI	IW			J				6			

Sheet No. 37 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/16
 System Owner Trumbull, CT Survey Customer Time 13:11
 Drainage Area Location (No. & Name) Calhoun ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 10.5 ft. Outgoing Grade to Invert 10.5 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Easement/Right of Way Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 37	Survey Date 2013/07/16	P.O. No.															
Location (No. & Name) Calhoun ESMT Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection															
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	Channel Exposure: Fully Opened																
	Channel Installed Yes																
Step	# Steps: 6																
	Step Material: Metal																

Sheet No. 37

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) Calhoun ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	10.5 ft.	Out	AC	C	8 in.				S	S	GR	
Comments													
2	12	10.4 ft.	In	AC	C	8 in.				S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
8.8 ft.			WI	IW		J					6			
8.8 ft.			WI	SAV							6			Aggregate visible; water from IW has worn the

Sheet No. 33 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/16
 System Owner Trumbull, CT Survey Customer Time 11:58
 Drainage Area Location (No. & Name) John St
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 13.3 ft. Outgoing Grade to Invert 13.3 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 33	Survey Date 2013/07/16	P.O. No.																											
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	Channel Exposure: Fully Opened																												
	Channel Installed Yes																												
Step	# Steps: 10																												
	Step Material: Metal																												

Sheet No. 33

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) John St

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	13.3 ft.	Out	AC	C	8 in.		S		S	GR		
Comments													
2	12	13.2 ft.	In	AC	C	8 in.		S		S	GR		
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
11.8 ft.			WI	IW		J					2			

Sheet No. 64 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/18
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) 11 Harned Street
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 6.6 ft. Outgoing Grade to Invert 6.6 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 64	Survey Date 2013/07/18	P.O. No.																											
Location (No. & Name) 11 Harned Street Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
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Sheet No. 64

Survey Date 2013/07/18

P.O. No.

Location (No. & Name) 11 Harned Street

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	6.6 ft.	Out		AC	C	C	8 in.		S	S	GR	
Comments													
2	12	6.5 ft.	In		AC	C	C	6 in.		S	S	LB	
Comments													
3	12	6.5 ft.	In		AC	C	C	6 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
1.3 ft.			CMI	MB							10			

Sheet No. 58 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/18
 System Owner Trumbull, CT Survey Customer Time 09:14
 Drainage Area Location (No. & Name) Beers Street
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 10.9 ft. Outgoing Grade to Invert 10.9 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.																								
	Cover Size: 26.0 in. Cover Size Width:	Cover Bearing Surface Diameter Width:																								
	Cover Material: Cast Iron	# of Vent Holes: Cover Frame Fit: Good																								
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Channel Installed Yes	Step Material: Metal																												

Sheet No. 58

Survey Date 2013/07/18

P.O. No.

Location (No. & Name) Beers Street

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	10.9 ft.	Out	AC	C	8 in.		S		S	GR		
Comments													
2	12	10.8 ft.	In	AC	C	8 in.		S		S	GR		
Comments													
3	3	10.8 ft.	In	AC	C	8 in.		S		S	OL		
Comments													
4	3	8.3 ft.	In	AC	C	8 in.		S		S	OU		
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
9.3 ft.			WI	IW		J					11	6		

Sheet No. 52 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/18
 System Owner Trumbull, CT Survey Customer
 Drainage Area Location (No. & Name) Carmel Ridge ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 11.9 ft. Outgoing Grade to Invert 11.9 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Easement/Right of Way Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input checked="" type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 52	Survey Date 2013/07/18	P.O. No.															
Location (No. & Name) Carmel Ridge ESMT Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection															
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	Channel Type: Formed																
	Channel Exposure: Fully Opened																
	Channel Installed Yes																
Step	# Steps: 9																
	Step Material: Metal																

Sheet No. 52

Survey Date 2013/07/18

P.O. No.

Location (No. & Name) Carmel Ridge ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	11.9 ft.	Out		PVC	C	8 in.			S	S	GR	
Comments													
2	12	11.8 ft.	In		PVC	C	8 in.			S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
11.1 ft.			WI	IW			J				5			

Sheet No. 50 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/18
 System Owner Trumbull, CT Survey Customer Time 22:50
 Drainage Area Location (No. & Name) Carmel Ridge ESMT
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 11.6 ft. Outgoing Grade to Invert 11.6 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge Not Known
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 50	Survey Date 2013/07/18	P.O. No.																											
Location (No. & Name) Carmel Ridge ESMT Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
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Channel	Channel Material: Brick																												
	Channel Type: Formed																												
	Channel Exposure: Fully Opened																												
	Channel Installed Yes																												
Step	# Steps: 7																												
	Step Material: Metal																												

Sheet No. 50

Survey Date 2013/07/18

P.O. No.

Location (No. & Name) Carmel Ridge ESMT

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	11.6 ft.	Out		AC	C	C	8 in.		S	S	GR	
Comments													
2	12	11.5 ft.	In		AC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
10.2 ft.			WI	IW			J				6	7		

Sheet No. 26 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/16
 System Owner Trumbull, CT Survey Customer Time 11:16
 Drainage Area Location (No. & Name) 20 Hyde
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 7.8 ft. Outgoing Grade to Invert 7.8 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover Cover Shape: Circular Cover Bearing Surface Diameter: 26.0 in.
 Cover Size: 26.0 in. Cover Size Width: Cover Bearing Surface Diameter Width:
 Cover Material: Cast Iron # of Vent Holes: Cover Frame Fit: Good
 Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 26	Survey Date 2013/07/16	P.O. No.																											
Location (No. & Name) 20 Hyde		Inspection Level Level 2																											
Locality/City Name Trumbull, CT		Inspection Status Surface Inspection																											
<table border="1"> <tr> <td>Adjustment Ring</td> <td>MH Adjustment Ring Type: None</td> <td>MH Adjustment Ring</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Material:</td> <td><input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Height:</td> <td><input type="checkbox"/> Cracked <input type="checkbox"/> Leaking</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation</td> </tr> </table>			Adjustment Ring	MH Adjustment Ring Type: None	MH Adjustment Ring		MH Adjustment Ring Material:	<input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn		MH Adjustment Ring Height:	<input type="checkbox"/> Cracked <input type="checkbox"/> Leaking			<input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation															
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	Channel Type: Formed																												
	Channel Exposure: Fully Opened																												
	Channel Installed Yes																												
Step	# Steps: 4																												
	Step Material: Metal																												

Sheet No. 26

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) 20 Hyde

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	7.8 ft.	Out		AC	C	C	8 in.		S	S	GR	
Comments													
2	12	7.7 ft.	In		AC	C	C	8 in.		S	S	GR	
Comments													

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
4.8 ft.			WI	IW			J				4			

Sheet No. 48 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/16
 System Owner Trumbull, CT Survey Customer Location (No. & Name) Clifford St Time 14:23
 Drainage Area
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 13.0 ft. Outgoing Grade to Invert 13.0 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement <input checked="" type="checkbox"/>	Concrete Collar <input type="checkbox"/>	Asphalt <input type="checkbox"/>	Grass/Dirt <input type="checkbox"/>	Gravel <input type="checkbox"/>	Other <input type="checkbox"/>
---	--	----------------------------------	-------------------------------------	---------------------------------	--------------------------------

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.
	Cover Size: 26.0 in. Cover Size Width:	Cover Bearing Surface Diameter Width:
	Cover Material: Cast Iron	# of Vent Holes: Cover Frame Fit: Good
		Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 48

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) Clifford St

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Adjustment Ring

MH Adjustment Ring Type: None

MH Adjustment Ring

<input type="checkbox"/> Sound	<input type="checkbox"/> Corroded/Pitted/Worn
<input type="checkbox"/> Cracked	<input type="checkbox"/> Leaking
<input type="checkbox"/> Broken	<input type="checkbox"/> Poor Installation

MH Adjustment Ring Materi

MH Adjustment Ring Height:

Frame

Frame Material: Cast Iron

Frame Offset Distance: 0 in.

Frame Bearing Surface Width: 1.0 in.

Frame Depth:

Frame Bearing Surface Depth: 2.0 in.

Frame Seal Inflow:

Frame Clear Opening Diameter: 24.0 in.

Frame Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input checked="" type="checkbox"/> Corroded/Pitted/Worn
<input type="checkbox"/> Broken	<input type="checkbox"/> Coated

Frame Seal Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Loose/Not Attached
<input type="checkbox"/> Cracked	<input type="checkbox"/> Offset
<input checked="" type="checkbox"/> Missing	<input type="checkbox"/>

Chimney

Chimney Material 1: Brick

Interior Chimney Coating/Liner:

Chimney Material 2:

Chimney Clear Opening:

Exterior Chimney Coating/Liner:

Chimney Depth: 1.5 ft.

Chimney I/I:

Cone

Cone Type: Conical off centered

Cone Depth: 5.1 ft.

Exterior Cone Coating/Liner:

Cone Material: Concrete (reinforced)

Interior Cone Coating/Liner:

Wall

Wall Diameter 1:

Wall Depth: 12.5 ft.

Wall Diameter 2:

Interior Wall Coating/Liner:

Wall Material: Concrete (reinforced)

Exterior Wall Coating/Liner:

Bench

Bench Present?: Yes

Bench Material: Brick

Bench Coating/Liner:

Channel/Step**Channel**

Channel Material: Brick
Channel Type: Formed
Channel Exposure: Fully Opened
Channel Installed Yes

Step

Steps: 10
Step Material: Metal

Sheet No. 48

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) Clifford St

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	13.0 ft.	Out		AC	C	C	8 in.		S	S	GR	
	Comments												
2	3	12.9 ft.	In		AC	C	C	8 in.		S	S	OL	
	Comments												
3	3	9.4 ft.	In		AC	C	C	8 in.		S	S	OU	
	Comments												

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
12.5 ft.			WI	IW		J					7			

Sheet No. 27 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/16
 System Owner Trumbull, CT Survey Customer Time 11:22
 Drainage Area Location (No. & Name) 19 Gwendolyn
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 6.4 ft. Outgoing Grade to Invert 6.4 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 27	Survey Date 2013/07/16	P.O. No.															
Location (No. & Name) 19 Gwendolyn Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection															
<table border="1"> <tr> <td>Adjustment Ring</td> <td>MH Adjustment Ring Type: None</td> <td>MH Adjustment Ring</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Material:</td> <td><input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Height:</td> <td><input type="checkbox"/> Cracked <input type="checkbox"/> Leaking</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation</td> </tr> </table>			Adjustment Ring	MH Adjustment Ring Type: None	MH Adjustment Ring		MH Adjustment Ring Material:	<input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn		MH Adjustment Ring Height:	<input type="checkbox"/> Cracked <input type="checkbox"/> Leaking			<input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation			
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	Channel Type: Formed																
	Channel Exposure: Fully Opened																
	Channel Installed Yes																
Step	# Steps: 3																
	Step Material: Metal																

Sheet No. 27

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) 19 Gwendolyn

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	6.4 ft.	Out	AC	C	C	8 in.			S	S	GR	
		Comments											
2	12	6.3 ft.	In	AC	C	C	8 in.			S	S	GR	
		Comments											

Sheet No. 28 Surveyor's name AEZ/WAE Certificate Number U-313-17656 Date 2013/07/16
 System Owner Trumbull, CT Survey Customer Time 11:38
 Drainage Area Location (No. & Name) 11 Gwendolyn
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 7.6 ft. Outgoing Grade to Invert 7.6 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.
	Cover Size: 26.0 in. Cover Size Width:	Cover Bearing Surface Diameter Width:
	Cover Material: Cast Iron	# of Vent Holes: Cover Frame Fit: Good
		Vent Hole Diameter:

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
<input type="checkbox"/> Vented/Slots	<input type="checkbox"/> Locking
<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
<input type="checkbox"/> Hatch Single	<input type="checkbox"/> Lamphole
<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 28

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) 11 Gwendolyn

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Adjustment Ring

MH Adjustment Ring Type: None

MH Adjustment Ring

<input type="checkbox"/> Sound	<input type="checkbox"/> Corroded/Pitted/Worn
<input type="checkbox"/> Cracked	<input type="checkbox"/> Leaking
<input type="checkbox"/> Broken	<input type="checkbox"/> Poor Installation

MH Adjustment Ring Materi

MH Adjustment Ring Height:

Frame

Frame Material: Cast Iron

Frame Offset Distance: 0 in.

Frame Bearing Surface Width: 1.0 in.

Frame Depth:

Frame Bearing Surface Depth: 2.0 in.

Frame Seal Inflow:

Frame Clear Opening Diameter: 24.0 in.

Frame Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted/Worn
<input type="checkbox"/> Broken	<input type="checkbox"/> Coated

Frame Seal Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Loose/Not Attached
<input type="checkbox"/> Cracked	
<input checked="" type="checkbox"/> Missing	<input type="checkbox"/> Offset

Chimney

Chimney Material 1: Brick

Interior Chimney Coating/Liner:

Chimney Material 2:

Chimney Clear Opening:

Exterior Chimney Coating/Liner:

Chimney Depth: 2.1 ft.

Chimney I/I:

Cone

Cone Type: Conical off centered

Cone Depth: 4.8 ft.

Exterior Cone Coating/Liner:

Cone Material: Concrete (reinforced)

Interior Cone Coating/Liner:

Wall

Wall Diameter 1:

Wall Depth: 7.0 ft.

Wall Diameter 2:

Interior Wall Coating/Liner:

Wall Material: Concrete (reinforced)

Exterior Wall Coating/Liner:

Bench

Bench Present?: Yes

Bench Material: Brick

Bench Coating/Liner:

Channel/Step**Channel**

Channel Material: Vitrified Clay

Step

Steps: 4

Channel Type: Formed

Step Material: Metal

Channel Exposure: Fully Opened

Channel Installed Yes

Sheet No. 28

Survey Date 2013/07/16

P.O. No.

Location (No. & Name) 11 Gwendolyn

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	7.6 ft.	Out		AC	C	C	8 in.		S	S	GR	
Comments													
2	12	7.5 ft.	In		AC	C	C	6 in.		S	S	LB	
Comments													

Sheet No. 12 Surveyor's name AEZ/JDM/WAE Certificate Number U-313-17656 Date 2013/07/15
 System Owner Trumbull, CT Survey Customer Time 14:39
 Drainage Area Location (No. & Name) Placid Street
 P.O. No. Locality/City Name Trumbull, CT
 Further Location Details Inspection Level Level 2
 Outgoing Rim to Invert 14.5 ft. Outgoing Grade to Invert 14.5 ft. Rim to Grade 0.0 ft.
 Use of Sewer Sanitary Year Laid Year Rehabilitated Tape/Media Number
 Purpose Sewer System Evaluation Survey Sewer Category
 Pre-Cleaning No Pre-Cleaning Date Cleaned Weather
 Location Code Light Highway Potential for Runoff Evidence of Surcharge No
 Access Point Type Manhole Coordinate System
 Northing Easting Elevation Accuracy of GPS
 Inspection Status Surface Inspection
 Additional Information

Manhole Surface Types

Concrete Pavement Concrete Collar Asphalt Grass/Dirt Gravel Other

Cover	Cover Shape: Circular	Cover Bearing Surface Diameter: 26.0 in.
Cover Size: 26.0 in.	Cover Size Width:	Cover Bearing Surface Diameter Width:
Cover Material: Cast Iron		# of Vent Holes:
Vent Hole Diameter:		

Cover Type

<input checked="" type="checkbox"/> Solid	<input type="checkbox"/> Bolted
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<input type="checkbox"/> Gasketed	<input type="checkbox"/> Inner Cover
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<input type="checkbox"/> Hatch Double	

Cover Condition

<input checked="" type="checkbox"/> Sound	<input type="checkbox"/> Missing
<input type="checkbox"/> Cracked	<input type="checkbox"/> Corroded/Pitted
<input type="checkbox"/> Broken	<input type="checkbox"/> Bolts Missing
<input type="checkbox"/> Restraint Missing	
<input type="checkbox"/> Restraint Defective	

Cover Insert

Cover Insert Type: None

Cover Insert Condition

<input type="checkbox"/> Sound	<input type="checkbox"/> Leaking
<input type="checkbox"/> Poorly Fitting	<input type="checkbox"/> Corroded
<input type="checkbox"/> Cracked/Torn/Holes	<input type="checkbox"/> Insert Fell

Sheet No. 12	Survey Date 2013/07/15	P.O. No.																											
Location (No. & Name) Placid Street Locality/City Name Trumbull, CT		Inspection Level Level 2 Inspection Status Surface Inspection																											
<table border="1"> <tr> <td>Adjustment Ring</td> <td>MH Adjustment Ring Type: None</td> <td>MH Adjustment Ring</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Material:</td> <td><input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn</td> </tr> <tr> <td></td> <td>MH Adjustment Ring Height:</td> <td><input type="checkbox"/> Cracked <input type="checkbox"/> Leaking</td> </tr> <tr> <td></td> <td></td> <td><input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation</td> </tr> </table>			Adjustment Ring	MH Adjustment Ring Type: None	MH Adjustment Ring		MH Adjustment Ring Material:	<input type="checkbox"/> Sound <input type="checkbox"/> Corroded/Pitted/Worn		MH Adjustment Ring Height:	<input type="checkbox"/> Cracked <input type="checkbox"/> Leaking			<input type="checkbox"/> Broken <input type="checkbox"/> Poor Installation															
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Sheet No. 12

Survey Date 2013/07/15

P.O. No.

Location (No. & Name) Placid Street

Inspection Level Level 2

Locality/City Name Trumbull, CT

Inspection Status Surface Inspection

Pipe Connections

Num	Clk	Rim to	Pos	Invert	Direc	Material	Shape	Diam	Width	Pipe Cond	Seal Cond	Special Cond	PSR
1	6	14.5 ft.	Out	AC	C	8 in.		S		S	GR		
	Comments												
2	9	14.4 ft.	In	AC	C	8 in.		S		S	OL		
	Comments												
3	9	78.0 ft.	In	AC	C	8 in.		S		S	OU		
	Comments												

Observations

Distance	Vid	Ref	Comp	Code	CD	Jnt	Stp	%	In1	In2	Fr	To	ImRef	Remarks
13.0 ft.			WI	IW		J					4			

APPENDIX B
Pipeline Rehabilitation Table

PIPELINE REHABILITATION TABLE

Town of Trumbull, Connecticut

Sewer System Rehabilitation Project 2

No.	Starting SMH	Ending SMH	Total Length	Street Name	Pipe Material	Typical Joint Length	Pipe Diameter	Defect Notes	Type of Rehab	Repair
1	271	270	286.1001	Wesley Dr	AC	13	18	Infiltration Runner at Lateral Connection Point	Chemical Grout- Lateral	Test and Seal Pipe Joints- Lateral at 202'
2	321	320	242	Twin Brooks Dr	AC	13	8	Infiltration Stains at Joints	Chemical Grout	Chemical Grout
3	447	446	298	Timberlane Trl	PVC	13	8	Infiltration Dripper at Lateral Connection Point	Chemical Grout- Lateral	Test and Seal Pipe Joints- Lateral at 116.4'
4	1149D	1149C	167	Val De Mere ESMT	AC	13	12	Roots Fine on Pipe Walls and Joints	Chemical Root Control	Chemical Root Control
5	1149E	1149D	181	Val De Mere ESMT	AC	13	12	Roots Fine at Joint and on Pipe Walls	Chemical Root Control	Chemical Root Control
6	1149C	1152	175**	Val De Mere ESMT	AC	13	12	Roots Medium at Joints, Root Ball at Joint	Chemical Root Control	Chemical Root Control
7	1163	1162	303	Val De Mere ESMT	AC	13	12	Broken	Cure in Place	Spot Liner at 303'- 6' long
8	1164A	1163	**	Edgewood Ave ESMT	AC	13	12	Broken Soil Visible	Cure in Place	Spot Liner at 95.3'- 6' long
9	1175	1174	320.9	Edgewood Ave	AC	13	8	Infiltration Runner at Joint	Chemical Grout	Chemical Grout
10	1182	1181	313	Main St	AC	13	8	Hole	Cure in Place	Spot Liner at 5.6'- 6' long
11	1203	1230	160.1001	Calhoun Ave	AC	3	8	Infiltration Runner at Joint	Chemical Grout	Chemical Grout
12	1207	1206	315	Calhoun Ave ESMT	AC	13	8	Infiltration Gusher at Lateral Connection Point	Chemical Grout- Lateral	Test and Seal Pipe Joints- Lateral at 250.8'
13	1211	1210	327.1001	Louis St	AC	3	8	Infiltration Runner at Joint	Chemical Grout	Chemical Grout

* Distance to defect measured from video inspection start manhole

** Contractor to field verify pipe length

APPENDIX C
Pipeline CCTV Inspection Reports



Inspection Report / Inspection: 1

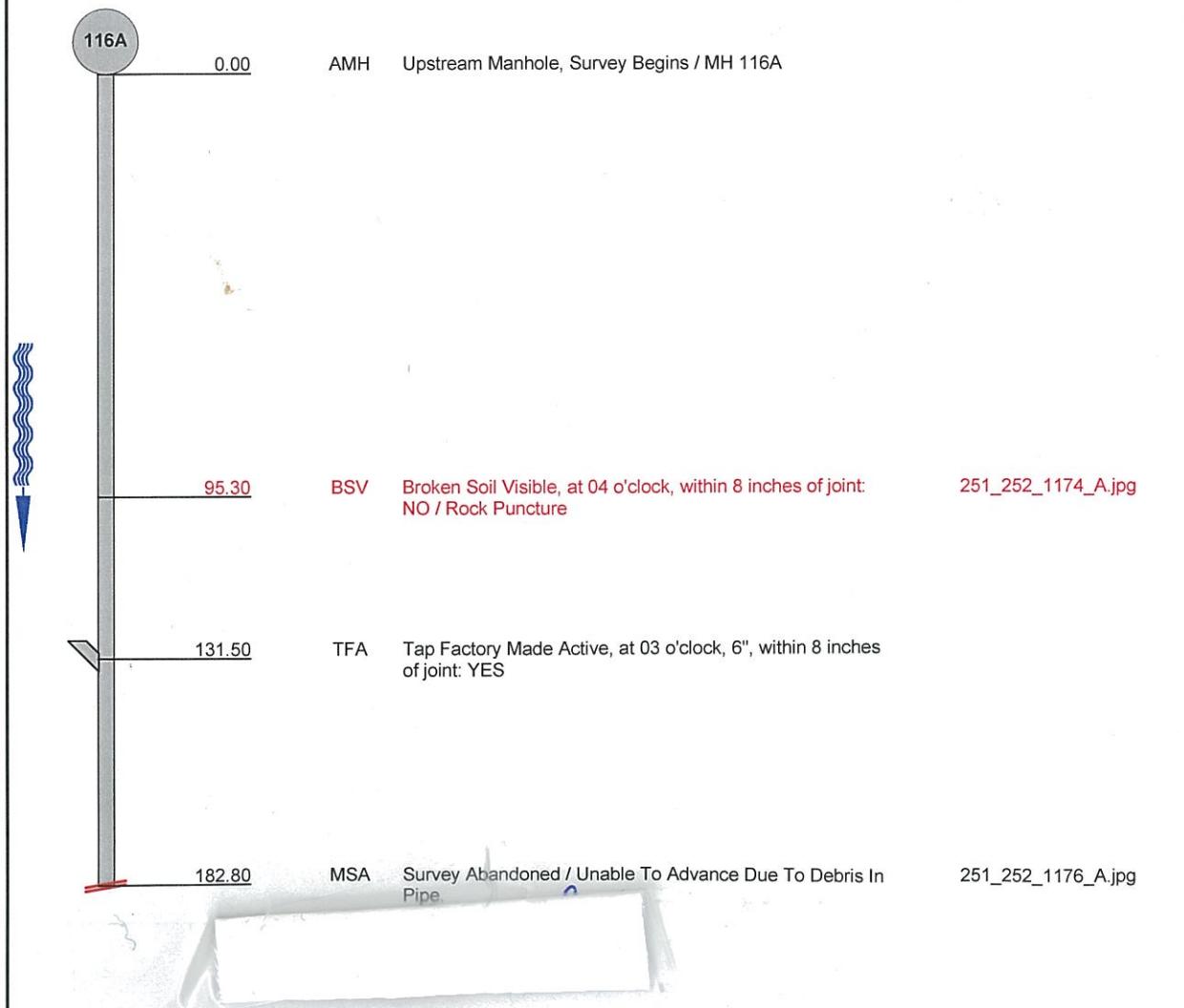
Date 5/2/2014	P/O. No.	Weather Dry	Surveyor's Name BP	Pipe Segment Reference	Section No. 11
Certificate No. U-209-8187	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 5/2/2014	Pre-Cleaning Jetting	Sewer Category

Street Edgewood Ave ESMT	Use of Sewer Sanitary	Upstream MH 116A
City Trumbull, CT	Drainage Area	Downstream MH 1163
Loc. details	Flow Control	Dir. of Survey Downstream
Location Code Light Highway	Length surveyed 182.80 ft	Section Length 182.80 ft

Purpose of Survey Routine Assessment	Joint Length 13.00 ft
Year Laid	Dia./Height 12 inch
Year Rehabilitated	Material Asbestos Cement
Tape / Media No. 4	Lining Method Other

Add. Information :

1:450	Position	Code	Observation	Photo
-------	----------	------	-------------	-------



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	0000	5	0	5	5	0	5



Inspection Report / Inspection: 1

Date 5/6/2014	P/O. No.	Weather Dry	Surveyor's Name BP	Pipe Segment Reference	Section No. 79
Certificate No. U-209-8187	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 5/6/2014	Pre-Cleaning Heavy Cleaning	Sewer Category

Street Wesley Dr	Use of Sewer Sanitary	Upstream MH 271
City Trumbull, CT	Drainage Area	Downstream MH 270
Loc. details	Flow Control	Dir. of Survey Downstream
Location Code Light Highway	Length surveyed 286.10 ft	Section Length 286.10 ft

Purpose of Survey Routine Assessment	Joint Length 13.00 ft
Year Laid	Dia./Height 18 inch
Year Rehabilitated	Material Asbestos Cement
Tape / Media No. 4	Lining Method Other

Add. Information :

1:690	Position	Code	Observation	Photo
	271	0.00	AMH Upstream Manhole, Survey Begins / MH 271	
	136.20	TBA	Tap Break-In Active, at 12 o'clock, 6", within 8 inches of joint: YES	
	202.00	TBA	Tap Break-In Active, at 12 o'clock, 6", within 8 inches of joint: YES	
	286.10	AMH	Downstream Manhole, Survey Ends / MH 270	
270				

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



Inspection Report / Inspection: 1

Date 4/16/2014	P/O. No.	Weather Dry	Surveyor's Name CK	Pipe Segment Reference	Section No. 116
Certificate No. 789456	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 4/16/2014	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street Twin Brooks Dr	Use of Sewer Sanitary	Upstream MH 321
City Trumbull, CT	Drainage Area	Downstream MH 320
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code Easement/Right of Way	Length surveyed 242.00 ft	Section Length 242.00 ft

Purpose of Survey Routine Assessment	Joint Length 13.00 ft
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Asbestos Cement
Tape / Media No. Disc # 1	Lining Method Other

Add. Information :

1:585	Position	Code	Observation	Photo
	321			
	- 0.00	AMH	Upstream Manhole, Survey Begins / MH 321	
	43.00	IS	Infiltration Stain, from 12 to 12 o'clock, within 8 inches of joint: YES	
	97.70	IS	Infiltration Stain, from 12 to 12 o'clock, within 8 inches of joint: YES	
	114.40	IS	Infiltration Stain, from 12 to 12 o'clock, within 8 inches of joint: YES	
	131.30	IS	Infiltration Stain, from 12 to 12 o'clock, within 8 inches of joint: YES	
	149.60	IS	Infiltration Stain, from 12 to 12 o'clock, within 8 inches of joint: YES	
	167.90	IS	Infiltration Stain, from 12 to 12 o'clock, within 8 inches of joint: YES	
	186.20	IS	Infiltration Stain, from 12 to 12 o'clock, within 8 inches of joint: YES	
	222.10	IS	Infiltration Stain, from 12 to 12 o'clock, within 8 inches of joint: YES	
	242.00	AMH	Downstream Manhole, Survey Ends / MH 320	
	320			
QSR	QMR	SPR	MPR	OPR
0000	0000	0	0	0
SPRI	MPRI	OPRI		
0	0	0		



Inspection Report / Inspection: 1

Date 4/16/2014	P/O. No.	Weather Dry	Surveyor's Name AW	Pipe Segment Reference	Section No. 149
Certificate No. 123456789	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 4/16/2014	Pre-Cleaning Jetting	Sewer Category

Street Timberlane Trl	Use of Sewer Sanitary	Upstream MH 447
City Trumbull, CT	Drainage Area	Downstream MH 446
Loc. details	Flow Control	Dir. of Survey Downstream
Location Code Light Highway	Length surveyed 298.00 ft	Section Length 298.00 ft

Purpose of Survey Routine Assessment	Joint Length 13.00 ft
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Polyvinyl Chloride
Tape / Media No. 1	Lining Method Other

Add. Information :

1:720	Position	Code	Observation	Photo
	447	0.00	AMH Upstream Manhole, Survey Begins / MH 447	
	31.70	TFC	Tap Factory Made Capped, at 03 o'clock, 6", within 8 inches of joint: NO	
	53.30	MWLS	Water Level, Sag In Pipe, 10 % Of Cross Sectional Area	
	93.60	MWLS	Water Level, Sag In Pipe, 15 % Of Cross Sectional Area	
	116.40	TFA	Tap Factory Made Active, at 12 o'clock, 6", within 8 inches of joint: NO	
	136.40	TFA	Tap Factory Made Active, at 12 o'clock, 6", within 8 inches of joint: NO	
	298.00	AMH	Downstream Manhole, Survey Ends / MH 446	
	446			

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	2200	0	4	4	0	2	2



Inspection Report / Inspection: 1

Date 4/30/2014	P/O. No.	Weather Heavy Rain	Surveyor's Name CK	Pipe Segment Reference	Section No. 167
Certificate No. 789456	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 4/30/2014	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street	Val De Mere ESMT	Use of Sewer	Sanitary	Upstream MH	1149D
City	Trumbull, CT	Drainage Area		Downstream MH	1149C
Loc. details		Flow Control	Not Controlled	Dir. of Survey	Downstream
Location Code	Easement/Right of Way	Length surveyed	167.00 ft	Section Length	167.00 ft

Purpose of Survey	Routine Assessment	Joint Length	13.00 ft
Year Laid		Dia./Height	12 inch
Year Rehabilitated		Material	Asbestos Cement
Tape / Media No.	Disc # 4	Lining Method	Other

Add. Information :

1:405 Position Code Observation Photo

1149D 0.00 AMH Upstream Manhole, Survey Begins / MH 1149D

1149C 167.00 AMH Downstream Manhole, Survey Ends / MH 1149C

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
-----	-----	-----	-----	-----	------	------	------

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



Inspection Report / Inspection: 1

Date 4/30/2014	P/O. No.	Weather Heavy Rain	Surveyor's Name CK	Pipe Segment Reference	Section No. 168
Certificate No. 789456	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 4/30/2014	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street Val De Mere ESMT	Use of Sewer Sanitary	Upstream MH 1149E
City Trumbull, CT	Drainage Area	Downstream MH 1149D
Loc. details	Flow Control	Dir. of Survey Downstream
Location Code Easement/Right of Way	Length surveyed 181.00 ft	Section Length 181.00 ft

Purpose of Survey Routine Assessment	Joint Length 13.00 ft
Year Laid	Dia./Height 12 inch
Year Rehabilitated	Material Asbestos Cement
Tape / Media No. Disc # 4	Lining Method Other

Add. Information :

1:435	Position	Code	Observation	Photo
	0.00	AMH	Upstream Manhole, Survey Begins / MH 1149E	
	181.00	AMH	Downstream Manhole, Survey Ends / MH 1149D	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	0000	0	0	0	0	0	0



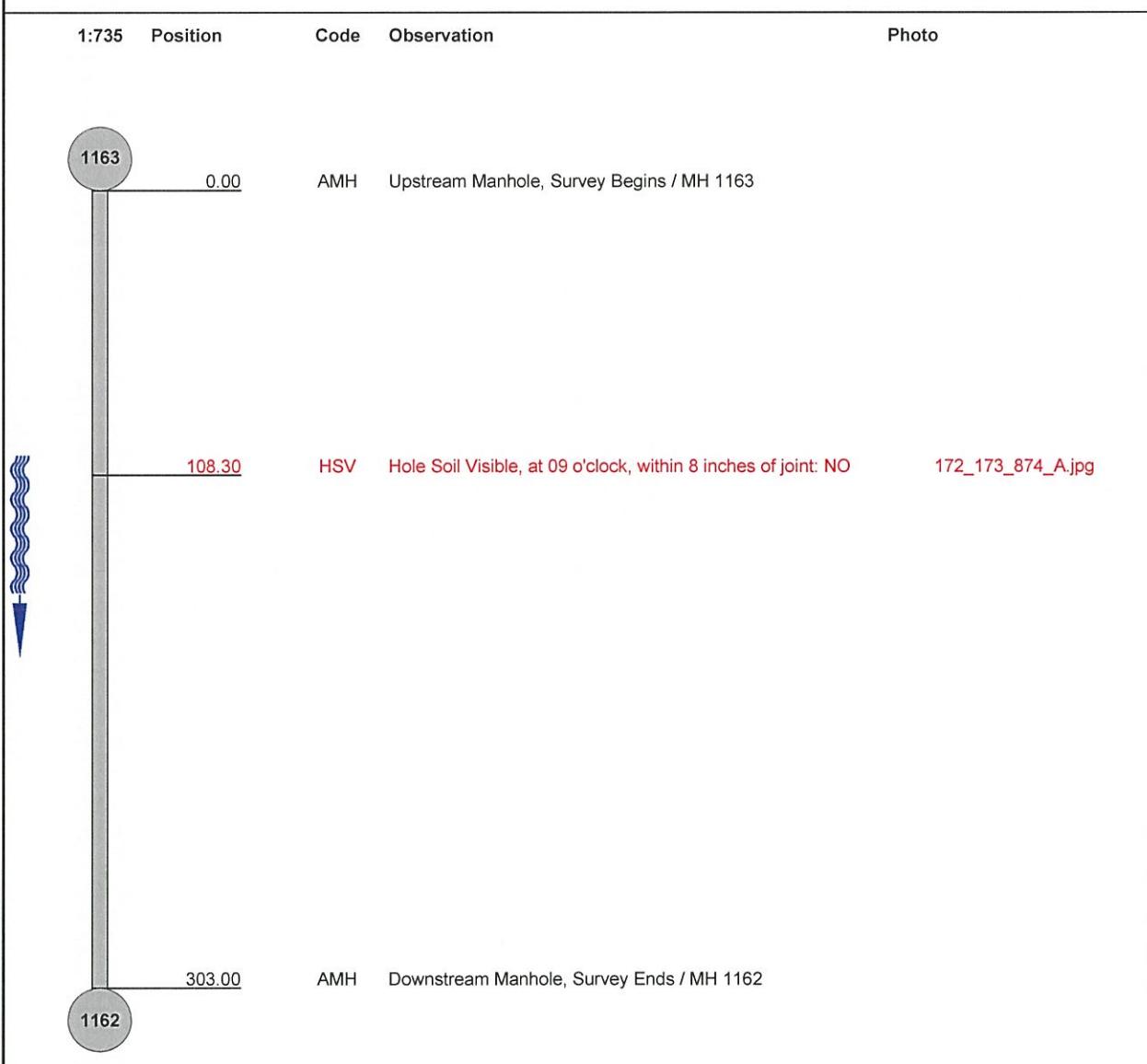
Inspection Report / Inspection: 1

Date 4/30/2014	P/O. No.	Weather Dry	Surveyor's Name CK	Pipe Segment Reference	Section No. 184
Certificate No. 789456	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 4/30/2014	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street	Val De Mere ESMT	Use of Sewer	Sanitary	Upstream MH	1163
City	Trumbull, CT	Drainage Area		Downstream MH	1162
Loc. details		Flow Control	Not Controlled	Dir. of Survey	Downstream
Location Code	Easement/Right of Way	Length surveyed	303.00 ft	Section Length	303.00 ft

Purpose of Survey	Routine Assessment	Joint Length	13.00 ft
Year Laid		Dia./Height	12 inch
Year Rehabilitated		Material	Asbestos Cement
Tape / Media No.	Disc # 3	Lining Method	Other

Add. Information :



QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
5100	0000	5	0	5	5	0	5



Inspection photos / Inspection: 1

City :	Street :	Date :	Pipe Segment Reference :	Section No :
Trumbull, CT	Val De Mere ESMT	4/30/2014		184



Photo: 172_173_874_A.jpg, VCR No.: Disc # 3
108.3FT, Hole Soil Visible, at 09 o'clock, within 8 inches of joint: NO



Inspection Report / Inspection: 1

Date 4/30/2014	P/O. No.	Weather Dry	Surveyor's Name CK	Pipe Segment Reference	Section No. 186
Certificate No. 789456	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 4/30/2014	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street	Val De Mere ESMT	Use of Sewer	Sanitary	Upstream MH	1164A
City	Trumbull, CT	Drainage Area		Downstream MH	1163
Loc. details		Flow Control	Not Controlled	Dir. of Survey	Upstream
Location Code	Easement/Right of Way	Length surveyed	17.10 ft	Section Length	17.10 ft

Purpose of Survey	Routine Assessment	Joint Length	13.00 ft
Year Laid		Dia./Height	12 inch
Year Rehabilitated		Material	Asbestos Cement
Tape / Media No.	Disc # 3	Lining Method	Other

Add. Information :

1:50 Position Code Observation Photo

1163 0.00 AMH Downstream Manhole, Survey Begins / MH 1163

17.10 MSA Survey Abandoned / Unable To Advance Due To Dirt.

QSR QMR SPR MPR OPR SPRI MPRI OPRI



Inspection Report / Inspection: 1

Date 4/16/2014	P/O. No.	Weather Dry	Surveyor's Name BP	Pipe Segment Reference	Section No. 195
Certificate No. U-209-8187	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 4/16/2014	Pre-Cleaning Jetting	Sewer Category

Street Edgewood Ave	Use of Sewer Sanitary	Upstream MH 1175
City Trumbull, CT	Drainage Area	Downstream MH 1174
Loc. details	Flow Control Not Controlled	Dir. of Survey Downstream
Location Code Light Highway	Length surveyed 320.00 ft	Section Length 320.90 ft

Purpose of Survey Routine Assessment	Joint Length 13.00 ft
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Asbestos Cement
Tape / Media No. 1	Lining Method Other

Add. Information :

1:780	Position	Code	Observation	Photo
1175	0.00	AMH	Upstream Manhole, Survey Begins / MH 1175	
	123.30	TBA	Tap Break-In Active, at 09 o'clock, 6", within 8 inches of joint: NO	
	126.50	TBA	Tap Break-In Active, at 03 o'clock, 6", within 8 inches of joint: NO	
	201.40	IR	Infiltration Runner, at 08 o'clock, within 8 inches of joint: YES / 2-3 GPM	49_50_312_A.JPG
	208.10	TBA	Tap Break-In Active, at 10 o'clock, 6", within 8 inches of joint: NO	
	223.30	TBA	Tap Break-In Active, at 10 o'clock, 6", within 8 inches of joint: NO	
	239.60	TBA	Tap Break-In Active, at 03 o'clock, 6", within 8 inches of joint: NO	
	311.90	TBA	Tap Break-In Active, at 03 o'clock, 6", within 8 inches of joint: NO	
	318.00	TBA	Tap Break-In Active, at 09 o'clock, 6", within 8 inches of joint: NO	
	320.00	AMH	Downstream Manhole, Survey Ends / MH 1174	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4100	0	4	4	0	4	4



Inspection photos / Inspection: 1

City :	Street :	Date :	Pipe Segment Reference :	Section No :
Trumbull, CT	Edgewood Ave	4/16/2014		195



Photo: 49_50_312_A.JPG, VCR No.: 1
201.4FT, Infiltration Runner, at 08 o'clock, within 8 inches of joint: YES



Inspection Report / Inspection: 1

Date 4/16/2014	P/O. No.	Weather Dry	Surveyor's Name BP	Pipe Segment Reference	Section No. 202
Certificate No. U-209-8187	Survey Customer Wright Pierce	System Owner Trumbull, Ct	Date Cleaned 4/16/2014	Pre-Cleaning Jetting	Sewer Category

Street City Loc. details Location Code	Main St Trumbull, CT Light Highway	Use of Sewer Drainage Area Flow Control Length surveyed	Sanitary Not Controlled 313.00 ft	Upstream MH Downstream MH Dir. of Survey Section Length	1182 1181 Downstream 313.00 ft
---	--	--	---	--	---

Purpose of Survey Year Laid Year Rehabilitated Tape / Media No.	Routine Assessment 1	Joint Length Dia./Height Material Lining Method	13.00 ft 8 inch Asbestos Cement Other
--	-------------------------	--	--

Add. Information :

1:765	Position	Code	Observation	Photo
	0.00	AMH	Upstream Manhole, Survey Begins / MH 1182	
	4.70	TBA	Tap Break-In Active, at 10 o'clock, 6", within 8 inches of joint: NO	
	5.30	RPP	Repair Patch, from 10 to 02 o'clock, within 8 inches of joint: NO / Patch Over Large Hole In Pipe.	47_48_301_A.JPG
	5.60	H	Hole, from 10 to 11 o'clock, within 8 inches of joint: NO	47_48_302_A.JPG
	46.60	TBA	Tap Break-In Active, at 10 o'clock, 6", within 8 inches of joint: NO	
	133.60	TBA	Tap Break-In Active, at 09 o'clock, 6", within 8 inches of joint: NO	
	313.00	AMH	Downstream Manhole, Survey Ends / MH 1181	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
4100	0000	4	0	4	4	0	4



Inspection photos / Inspection: 1

City :
Trumbull, CTStreet :
Main StDate :
4/16/2014

Pipe Segment Reference :

Section No :
202

Photo: 47_48_301_A.JPG, VCR No.: 1
5.3FT, Repair Patch, from 10 to 02 o'clock, within 8 inches of joint: NO

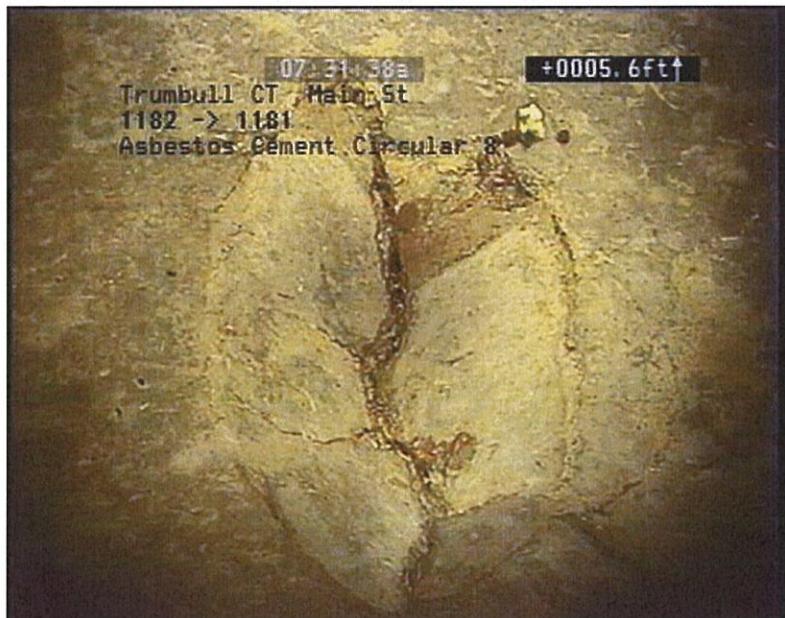


Photo: 47_48_302_A.JPG, VCR No.: 1
5.6FT, Hole, from 10 to 11 o'clock, within 8 inches of joint: NO



Inspection Report / Inspection: 1

Date 4/11/2014	P/O. No.	Weather Dry	Surveyor's Name BP	Pipe Segment Reference	Section No. 221
Certificate No. U-209-8187	Survey Customer Town of Trumbull	System Owner Trumbull, CT	Date Cleaned 4/11/2014	Pre-Cleaning Jetting	Sewer Category

Street Calhoun Ave	Use of Sewer Sanitary	Upstream MH 1203
City Trumbull, CT	Drainage Area	Downstream MH 1230
Loc. details	Flow Control	Dir. of Survey Upstream
Location Code Light Highway	Length surveyed 160.10 ft	Section Length 160.10 ft

Purpose of Survey Routine Assessment	Joint Length 3.00 ft
Year Laid	Dia./Height 8 inch
Year Rehabilitated	Material Asbestos Cement
Tape / Media No. 1	Lining Method Other

Add. Information :

1:390	Position	Code	Observation	Photo
	0.00	AMH	Downstream Manhole, Survey Begins / MH 1230	
	3.00	TFA	Tap Factory Made Active, at 06 o'clock, 8", within 8 inches of joint: YES / Drop connection	
	7.50	IR	Infiltration Runner, from 04 to 08 o'clock, within 8 inches of joint: YES	26_27_174_A.jpg
	109.50	TBA	Tap Break-In Active, at 02 o'clock, 6", within 8 inches of joint: NO	
	160.10	AMH	Upstream Manhole, Survey Ends / MH 1203	
1230				
1203				
QSR	QMR	SPR	MPR	OPR
0000	4100	0	4	4
SPRI	MPRI	OPRI		
0	4	4		



Inspection photos / Inspection: 1

City : Trumbull, CT	Street : Calhoun Ave	Date : 4/11/2014	Pipe Segment Reference :	Section No : 221
------------------------	-------------------------	---------------------	--------------------------	---------------------



Photo: 26_27_174_A.jpg, VCR No.: 1
7.5FT, Infiltration Runner, from 04 to 08 o'clock, within 8 inches of joint:
YES



Inspection Report / Inspection: 1

Date 4/16/2014	P/O. No.	Weather Dry	Surveyor's Name CK	Pipe Segment Reference	Section No. 225
Certificate No. 789456	Survey Customer Wright Pierce	System Owner Trumbull, CT	Date Cleaned 4/16/2014	Pre-Cleaning No Pre-Cleaning	Sewer Category

Street	Harned PI	Use of Sewer	Sanitary	Upstream MH	1207
City	Trumbull, CT	Drainage Area		Downstream MH	1206
Loc. details		Flow Control	Not Controlled	Dir. of Survey	Downstream
Location Code	Easement/Right of Way	Length surveyed	315.00 ft	Section Length	315.00 ft

Purpose of Survey	Routine Assessment	Joint Length	13.00 ft
Year Laid		Dia./Height	8 inch
Year Rehabilitated		Material	Asbestos Cement
Tape / Media No.	Disc # 2	Lining Method	Other

Add. Information :

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	5121	0	7	7	0	3.5	3.5



Inspection photos / Inspection: 1

City :	Street :	Date :	Pipe Segment Reference :	Section No :
Trumbull, CT	Harned Pl	4/16/2014		225



Photo: 45_46_252_A.jpg, VCR No.: Disc # 2
250.8FT, Infiltration Gusher, from 10 to 12 o'clock, within 8 inches of
joint: YES



Inspection Report / Inspection: 1

Date 4/9/2014	P/O. No.	Weather Dry	Surveyor's Name BP	Pipe Segment Reference	Section No. 228
Certificate No. U-209-8187	Survey Customer Town of Trumbull	System Owner Trumbull, CT	Date Cleaned 4/9/2014	Pre-Cleaning Jetting	Sewer Category

Street City Loc. details Location Code	Louis St Trumbull, CT Light Highway	Use of Sewer Drainage Area Flow Control Length surveyed	Sanitary Not Controlled	Upstream MH Downstream MH Dir. of Survey Section Length	1209 1210 Downstream 327.10 ft
---	---	--	----------------------------	--	---

Purpose of Survey Year Laid Year Rehabilitated Tape / Media No.	Routine Assessment 1	Joint Length Dia./Height Material Lining Method	3.00 ft 8 inch Asbestos Cement Other
--	-------------------------	--	---

Add. Information :

1:792	Position	Code	Observation	Photo
	0.00	AMH	Upstream Manhole, Survey Begins / MH 1209	
	4.00	TBA	Tap Break-In Active, at 09 o'clock, 4", within 8 inches of joint: NO	
	7.50	TBA	Tap Break-In Active, at 03 o'clock, 6", within 8 inches of joint: YES	
	86.80	IR	Infiltration Runner, at 01 o'clock, within 8 inches of joint: YES / 3-4 GPM	1_1_5_A.jpg
	86.80	MMC	Material Change, Polyvinyl Chloride (PVC)	
	89.00	TFA	Tap Factory Made Active, at 10 o'clock, 6", within 8 inches of joint: YES	
	89.40	MMC	Material Change, Vitrified Clay Pipe	
	118.10	TBA	Tap Break-In Active, at 02 o'clock, 6", within 8 inches of joint: NO	
	147.20	TBA	Tap Break-In Active, at 10 o'clock, 6", within 8 inches of joint: NO	
	182.90	TBA	Tap Break-In Active, at 03 o'clock, 6", within 8 inches of joint: NO	
	199.10	TBA	Tap Break-In Active, at 03 o'clock, 6", within 8 inches of joint: NO	
	241.50	TBA	Tap Break-In Active, at 09 o'clock, 6", within 8 inches of joint: YES	
	257.70	TFA	Tap Factory Made Active, at 03 o'clock, 6", within 8 inches of joint: NO	
	299.90	TFA	Tap Factory Made Active, at 09 o'clock, 6", within 8 inches of joint: YES	
	322.80	TBA	Tap Break-In Active, at 01 o'clock, 6", within 8 inches of joint: NO	



Inspection Report / Inspection: 1

Date : 4/9/2014	Job number :	Weather : Dry	Operator : BP	Counter : 228	Section name :
Present :	Vehicle :	Camera :	Preset :	Cleaned : Jetting	Rate :

1:792	Position	Code	Observation	Photo
	327.10	AMH	Downstream Manhole, Survey Ends / MH 1210	

QSR	QMR	SPR	MPR	OPR	SPRI	MPRI	OPRI
0000	4100	0	4	4	0	4	4

Inspection photos / Inspection: 1City :
Trumbull, CTStreet :
Louis StDate :
4/9/2014

Pipe Segment Reference :

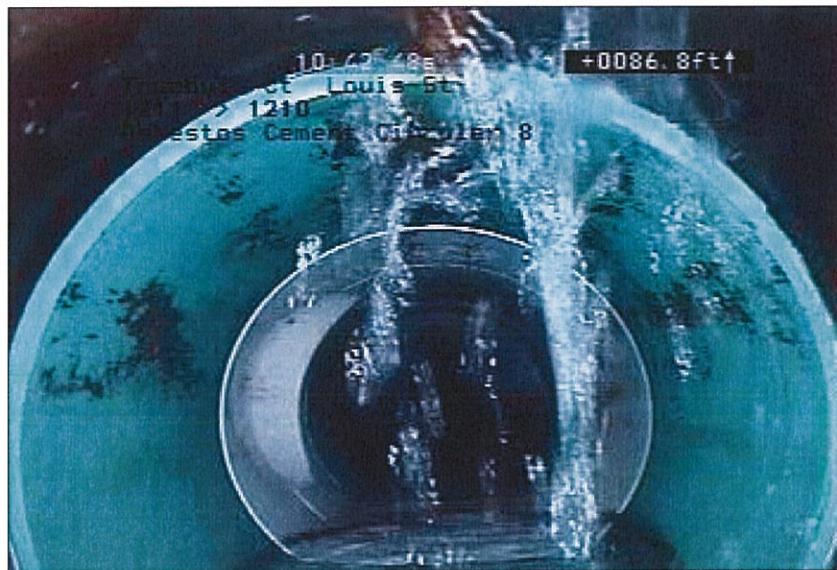
Section No :
228

Photo: 1_1_5_A.jpg, VCR No.: 1
86.8FT, Infiltration Runner, at 01 o'clock, within 8 inches of joint: YES

APPENDIX D
Trumbull Road Classifications

FUTURE ROAD CLASSIFICATIONEXPRESSWAY:

Route 25
Route 15 (Merritt Parkway)
Route 8

PRINCIPAL ARTERIAL:

Route 111 (Main St.)
Route 111 (Monroe Tpke.)
Route 25 (Main St. north of
Monroe Tpke.)
Route 127 (Church Hill Rd.)

Route 127 (White Plains Rd.)
Route 108 (Huntington Tpke.)
Route 108 (Nichols Ave.)
Route 711 (Huntington Tpke.)

MINOR ARTERIAL:

Madison Ave.
Buck Hill Rd.
Chestnut Hill Rd.
Old Town Rd.
Edison Rd.

Whitney Ave.
Daniels Farm Rd.
Reservoir Ave.
Booth Hill Rd.

COLLECTOR:

Tashua Rd.
Stonehouse Rd.
Lake Ave.
Park Lane
Blackhouse Rd.
Plattsburgh Rd.
Teller Rd.
Porters Hill Rd.

Moose Hill Rd.
Hurd Rd.
Strobel Rd.
MacDonald Rd.
Mischa Hill Rd.
Unity Rd.
Shelton Rd.

a/1/10

WRIGHT-PIERCE 
Engineering a Better Environment